U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

PB-255 249

# ACCOMPLISHMENT PLAN - WATER QUALITY

## SOUTH PLATTE RIVER BASIN

ENVIRONMENTAL PROTECTION AGENCY

JUNE 1972

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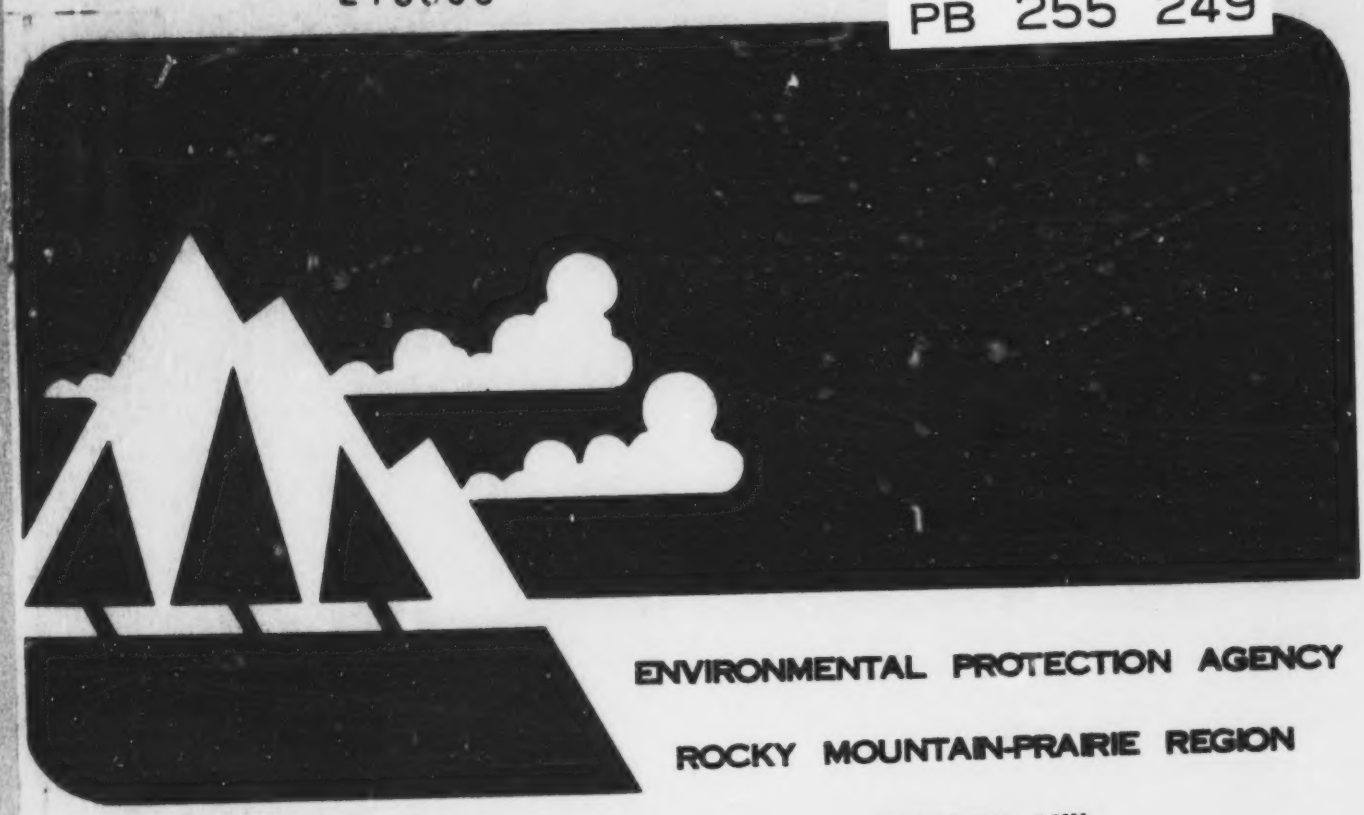
PB 255 249



ENVIRONMENTAL PROTECTION AGENCY

ROCKY MOUNTAIN-PRAIRIE REGION

REGION VIII

# SOUTH PLATTE RIVER BASIN

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# ACCOMPLISHMENT PLAN - WATER QUALITY

## REGION VIII

## SOUTH PLATTE RIVER BASIN

JUNE 1972

JOHN A. GREEN
REGIONAL ADMINISTRATOR

DAVID D. EMERY
ASSISTANT FOR PLANNING
AND EVALUATION

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## SECTION 1

## GENERAL

The South Platte River Basin has been selected as one of Region VIII's highest priority areas for an abatement and control program. The basin encompasses the largest metropolitan area in the Region (Denver) as well as major portions of the urbanizing Front Range in Colorado.

A program is defined to achieve by 1976 existing dissolved oxygen and bacteria standards and to upgrade the quality of specific reaches of the basin. One primary concern is to maintain existing high quality waters upstream from the urbanizing centers.

This accomplishment plan addresses the water quality control needs of the South Platte River Basin and establishes specific tasks and plans of accomplishment for meeting Region VIII objectives.

SECTION 2

## BROAD OBJECTIVES

To improve quality of the South Platte River to permit beneficial uses not now provided as follows:

1. Water quality upstream from Denver will be improved to permit recreation, including swimming, and drinking water supply through reduction of fecal coliform levels. Existing fecal coliform levels will be reduced to the compliance level of 100 per 100 ML by December 31, 1973.

2. Quality of water in the Denver area and downstream to the Colorado-Nebraska State line will be improved to permit drinking water supply and warm water fisheries through reduction of fecal coliform and through an increase in the dissolved oxygen level. Existing fecal coliform levels in excess of 10,000 per 100 ML will be reduced by 30% below Greeley, Colorado, by December 31, 1972. Fecal coliform levels in the entire reach in and below Denver will be brought to the compliance level of 1,000 per 100 ML by December 31, 1976. Dissolved oxygen compliance level of 5.0 milligrams per liter will be met in this reach by December 31, 1976, through a reduction of 43,000 pounds of biochemical oxygen demand per day by the end of 1972, and 111,000 pounds of biochemical oxygen demand per day by the end of 1976.

The following table, PRIORITY BASIN WORK SHEET - BASIN SUMMARY, provides the analytical basis in terms of Biochemical Oxygen Demand for achieving the above stated objectives.

Name of Basin SOUTH PLATTE RIVER

STORET Minor Basin ID No. 0910
Region VIII
State(s) Colorado-Wyoming

1. Area covered:

BASIN SUMMARY

2. Water quality objectives:

| | (a) Current criteria | (b) EPA Objective: Minimum Acceptable Ambient Level | (c) Actual Level at Worst Time of Yr. | Accuracy (% ±) |
|---|---|---|---|---|
| Measure #1 | mg/l | mg/l | mg/l | ± % |
| Measure #2 etc. | See Reaches #1-5 on South Platte and Reach #1 and 2 on Cache La Poudre for applicable standards. | | | |

3. Estimated pollution load--all sources (average FY 72):

| | | Load | Accuracy (% ±) |
|---|---|---|---|
| Pollutant #1 | | pounds/day | ± % |
| Pollutant #2 | $BOD_5$ | 169,000 | 10% |
| etc. | | | |

4. Estimated pollution load reduction required to meet EPA water quality objectives derived from 2(c) - 2(b):

| | | Required Reduction | Accuracy (% ±) |
|---|---|---|---|
| Pollutant #1 | | pounds/day | ± % |
| Pollutant #2 | $BOD_5$ | 66,200 | |
| etc. | | | |

5. Reduction firmly committed by FY 72 and prior year actions:

| | Year of Actual Reduction | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 | 42,450 | 66,850 | 72,250 | 83,050 |
| etc. | | | | |

6. Additional reductions to be obtained by FY 73 and FY 74 commitments:

| | Year of Actual Reduction | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 | 500 | 4,200 | 9,500 | 28,000 |
| etc. | | | | |

Figure 10. Priority Basin Work Sheet

7. Increases in pollution discharges expected:

| | | Year of Actual Increase | | | |
|---|---|---|---|---|---|
| | | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 | $BOD_5$ | 19,750 | 36,210 | 55,270 | 80,830 |
| etc. | | | | | |

8. Total reductions to be obtained--sum of 5 and 6 above:

| | | Year of Actual Reduction | | | |
|---|---|---|---|---|---|
| | | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 | $BOD_5$ | 43,350 | 71,050 | 81,750 | 111,250* |
| etc. | | | | | |

9. Total reductions required--sum of 4 and 7 above:

| | | Year of Actual Reduction | | | |
|---|---|---|---|---|---|
| | | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 | $BOD_5$ | 83,700 | 102,350 | 121,400 | 146,950 |
| etc. | | | | | |

10. Year in which minimum acceptable water quality levels are to be achieved--compare 8 and 9 above: Fiscal Year 1976.

*Programs underway to define and obtain commitments from additional municipal and industrial sources.

11. If figures for items 2 through 7 above are not available, please provide estimate of when they will become available through monitoring and other activities:

Are items 3, 5, and 6 above derived from detailed discharger inventories? (Estimates from rough materials balance and flow calculations are acceptable.)

Yes

12. Key pollutants, if any, for which a weight or other quantity measure is not appropriate:

Figure 10 - Continued

SECTION 3

## SPECIFIC TASKS AND ACCOMPLISHMENT PLANS FOR WATER QUALITY IMPROVEMENT

### 3.1 Upgrade classification of the South Platte.

#### Purpose of the Plan

To develop a strategy to obtain recreation use classification upstream from Denver and a public water supply classification for the entire main stem. To develop a strategy for upgrading the classifications of significant tributaries to the South Platte River. This will include special measures for protecting existing high quality waters.

#### Need for the Plan

Legal rights to the use of water from the South Platte for domestic supply exists throughout the South Platte Basin. Existing stream classification does not provide for this beneficial use. The South Platte upstream from Denver is presently used for body contact recreation and significant water-orientated recreation projects are under construction (Chatfield Dam) or proposed (Littleton Flood Plain Park). Present stream classification does not provide for body contact recreation, nor is such classification proposed by the State of Colorado.

An attempt to classify the South Platte for domestic water supply, in the opinion of the Colorado State Attorney General, was not accomplished in keeping with the necessary administrative procedures. Therefore, the State Water Pollution Control Commission must again go through the standard-setting process for the South Platte River and its tributaries to accomplish the desired upgrading.

Existing quality of the Cache La Poudre River when compared to committed waste reductions indicates the possibility of extending the cold water fishing classification downstream from the present reach designation to Greeley.

Headwaters of the South Platte River originate on the east slope of the Rocky Mountains and on the west slope via transbasin diversions. These waters are generally impounded (Cherry Creek, Chatfield, Mt. Carbon Reservoirs, etc.) upstream of major urban areas to provide recreation and storage for flood control and M & I supplies. Viable control policies for these high quality waters must be established. Direct use of a "no discharge" policy and refined levels of AWT (i.e., effluent requirements) will be investigated and adopted as appropriate.

3.1.1 Hold negotiations.

Approach and Milestones

The State of Colorado Water Pollution Control Commission by their early effort to upgrade the South Platte River has demonstrated the desire to upgrade water quality in this stream. The regional strategy is geared to make an immediate impact on the commission to encourage them to quickly take the steps necessary to adopt the desired classification in a manner that satisfies the procedural requirements of the State and Federal Government. This impact can be best achieved by marshalling the other state interests that support the Region's position to convince the Executive Committee of the urgency of the need for the reclassification and to then present the matter to the main body of the Colorado Water Pollution Control Commission. In this regard, EPA has established the following milestones:

1. Contact with state agencies with an interest in water quality of the South Platte River to enlist support for the proposed upgrading of use classification, February 1, 1972.
2. Present position to Executive Committee of Colorado Water Pollution Control Commission at next scheduled meeting presented April 11, 1972.
3. Continue process identified in item 1. Make presentation to Colorado Water Pollution Control Commission as appropriate.
4. Adoption of standards, October 30, 1972.

Unresolved Policy Issues and Constraints

The specific accomplishment date of this objective cannot be precisely identified due to the nature of the negotiations.

Project Manager: Patrick J. Godsil, Planning Section

3.1.2 Hold Hearings.

Approach and Milestones

Convene Water Quality Standards hearing to upgrade the water quality standards in the South Platte River Basin if the State of Colorado fails to reclassify the South Platte and request the Administrator's approval. If necessary and timely, this hearing could be combined with the reconvened South Platte River Enforcement Conference hearings.

1. State of Colorado completes their reclassification procedures and submits changes to Administrator for approval; November 1, 1972. If this occurs, the need for a standards-setting conference is negated.
2. If the State of Colorado fails to take action as stated in Milestone (1) above, public notice for convening standards-setting conference will be published; November 1, 1972.
3. Standards-setting conference convened; January 1973.
4. Changes in standards recommended to Administrator; February 1973.
5. Approval of changes; March 1973.
6. Full implementation of changes; December 1976.

Unresolved Policy Issues

Present Colorado law does not recognize in-stream uses such as recreation, fishery, etc., as being beneficial water uses. In order to fully implement our objectives, this legal viewpoint will have to be changed and it is planned that the conferees will consider this and recommend appropriate changes.

Project Manager: Thomas T. Rogers, Chief, Enforcement Branch

3.1.3 Develop Public Information Program on the need to upgrade use classification for the South Platte River.

Approach and Milestones

As a first step, EPA must work closely with State and local officials to develop a meaningful public relations program incorporating the ideas of all agencies concerned. From a Public Affairs standpoint, the public must be convinced of two facts: one, the South Platte can be upgraded for public water supply and recreational use; and, two, in addition to treatment installation, etc., these uses may be threatened if they are not legally protected. A number of suggestions for achieving this follow below:

1. Encourage Colorado Magazine to publish a story or stories from the past, proving that trout fishing once was good in the South Platte and suggesting that it can be again.
2. Utilizing EPA-log, the regional publication, outlining in detail each time what is being accomplished in the way of clean-up, who is doing the work, and the obstacles yet to be overcome.
3. Coordinating programs with citizen, student and youth groups, publicizing the situation and interesting them in the crusade to upgrade the South Platte. Clean-up or grass planting programs to be undertaken, accompanied by publicity.

4. Radio spot saturations, informing the public of current developments and prospects for the future.

5. Aiming for domestic and contact recreational uses of the South Platte in time for Colorado's 100th Anniversary and the Nation's bi-centennial celebration.

Project Manager: James D. Bowyer, Public Affairs Division

## 3.2 Survey waste water treatment facilities

### Purpose of Plan

This plan involves an evaluation of municipal waste water treatment facilities in the South Platte River Basin to assess the needs of the plants and to effect improved operation and maintenance practices.

### Need for the Plan

More efficient operation and maintenance practices at waste water treatment facilities can provide improved effluent quality. This improved quality in turn results in an improvement in the quality of the receiving stream. Improved operation and maintenance of plants also helps protect the tremendous public investment in waste treatment works, locally thru the various municipal systems and nationally thru the municipal waste water construction grants program.

Serious pollution problems exist in the South Platte River Basin. Much of the pollution load discharged to the River and its tributary streams originates from municipal systems. Municipal systems in the Denver Metropolitan area alone handle the waste loads from an equivalent population in excess of a million people. Experience has shown that substantial improvements can be made in many municipal waste treatment works through effective in-plant audits and evaluations, through operator development and training and through in-plant assistance programs. A program that will help insure the best possible treatment from existing plants and equipment and that will help assure compliance by new plants with the needs of the basin for high quality waste water treatment

Constitutes an important part of any program to upgrade and properly manage the quality of water in the South Platte River Basin.

## Strategy to Accomplish Objectives

During FY 1973, planned operation, maintenance and training needs surveys will be made in 20 additional major municipal waste water treatment plants in the South Platte River Basin. In FY 1974 the remaining major plants in the Basin, those not surveyed during FY 1972 and 1973, will be surveyed. This will require approximately 25 additional plant surveys during FY 1974. In FY 1975 the remaining 30 plants in the Basin will be surveyed, plus any new plants constructed during the interim period.

Plants will be selected for evaluation based on input from the Planning Branch, Air and Water Programs Division, EPA; the Colorado State Department of Health; the Denver Regional Council of Governments; and EPA's National Field Investigations Center at Denver.

Each facility to be visited will be evaluated to determine the following information:

1. With present facilities and loadings, is the operation and maintenance adequate to achieve an optimum level of performance with regard to $BOD_5$ and suspended solids removal?
2. Are laboratory control procedures and staffing practices adequate to maintain a consistently high quality effluent and provide for proper maintenance and care of facilities?

3. Are adequate programs in effect to control industrial wastes, infiltration or other wastes discharged to the sewer system that might be harmful to the system, the plant or otherwise be incompatible with the type of treatment provided?
4. What are the projected loads on the plant and what is the short-term need for waste water treatment works construction?
5. How effective are present disinfection practices in reducing bacterial pollution (i.e., coliform concentration in the effluents discharge to surface waters)?
6. Would operation training help to improve performance and thus effluent quality?
7. Would other regional resources such as Research and Monitoring, laboratory assistance, technology transfer information, etc., improve performance and thus effluent quality?

As a guide to determining this information, a standard performance evaluation questionnaire (FWPCA Form 12) will be utilized at each facility visited. Results or findings of each evaluation will be reported to the municipalities or sanitary districts involved and to the Colorado State Department of Health and other interested agencies.

The plant visits will be coordinated with the staff of the Colorado Department of Health, with the Denver Regional Council of Governments where appropriate, and with County Health Department personnel as well as the various plant superintendents.

## Interrelationships

A brief summary of the interrelationships that exist are outlined below:

1. Colorado State Department of Health.

   The State Department of Health has responsibility for operation and maintenance of waste water treatment facilities within its boundaries as well as authority to enter these facilities to make various inspections. The State is, therefore, aware of those facilities which may need assistance and also can assist in gaining access to these facilities. Therefore, to be successful in the accomplishment plan will require full cooperation and approval from the Colorado State Department of Health.

2. County Health Departments.

   Several counties have specifically requested EPA to inform them of all our activities that are to be conducted in their county in order that they may plan to have personnel accompany EPA on proposed surveys. Notification of our planned survey activities will be given to the appropriate counties.

3. National Field Investigations Center (EPA) at Denver.

   The National Field Investigations Center (NFIC) recently completed a survey of numerous waste water treatment facilities in the South Platte area. NFIC can provide valuable information concerning the plants in the selected target areas.

4. Denver Regional Council of Governments (DRCOG).

   DRCOG is also planning an evaluation survey of the plants in the Metro-Denver area as part of its 3(C) study. It has been established, however, that DRCOG's objectives do not conflict or overlap those included in this plan. It is important to point out that valuable information will be collected by DRCOG and lines of communication will be established and maintained throughout EPA's survey to allow a free exchange of information concerning plants in the metropolitan area.

5. Metropolitan Denver Sewage Disposal District No. 1.

   Many of the plants in the metropolitan area are satellite plants to MDSDD #1. This, in addition to other planned activities, will necessitate keeping MDSDD #1 well informed of our planned activities.

6. Cities and Sanitary Districts.

   The cities and sanitary districts that operate the various treatment facilities will be kept informed of our planned survey activities. It is anticipated that the State Department of Health will assist in this activity.

## Results and Milestones

Complete selection of specific plants to be visited and prepare initial survey schedule, August 1, 1972.

Complete surveys of first 10 plants to be surveyed by November 30, 1972.

Complete evaluation of data collected and make recommendations concerning follow-up actions by January 31, 1973.

Complete surveys of next 10 plants to be surveyed by April 30, 1973.

Complete evaluation of data collected and make recommendations concerning follow-up actions by June 30, 1973.

Complete surveys and evaluations of all major South Platte River Basin plants by June 30, 1974.

Complete surveys and evaluations of all 80 South Platte River Basin plants by June 30, 1975.

Project Manager: Stanley M. Smith, Municipal Waste Water Branch

3.3 Provide Training and Technical Assistance

Purpose of Plan

To develop a program for and initiate action to provide technical assistance and training to upgrade operation and maintenance for waste water treatment facilities.

Need for Plan

The need for the plan will be determined by the Accomplishment Plan which provides for an initial O&M survey of facilities and an evaluation of their operation, maintenance, training, and technical assistance needs.

Approach

Those facilities selected for follow-up assistance will be provided formal or on-site training. Typical assistance projects will consist of the following:

1. Provide formal training to plant operators concerning operations of waste water treatment facilities.
   a. The Sacramento Field Study Course is being made available to the operators. Two operators from Brighton are currently enrolled. Additional operators in the Basin will be enrolled in FY 73 and will represent an estimated 20-30 plants including those plants in the initial survey.
   b. The training provided under Section 5(g)(1) recently completed a 12-week course for trainees from 10 plants in the Basin. Additional training is planned in FY 73 for trainees from at least 20-30 plants including those plants in the initial survey.

2. Provide on-site training in conducting and interpreting control tests for the purpose of preventing and controlling water pollution.
3. Provide training in conducting laboratory analyses so that the plant's liquid effluent can be monitored. Instruction will be provided by a Mr. Haven who is an instructor for the Colorado State Health Department Water Pollution Control Section and under a contract with the EPA.
4. Investigate various unit processes and plant facilities to determine if modifications or different facilities would be desirable.
5. Monitor plant performance by reviewing records and spot sampling effluents and report on changes in effluent quality.

Following the O&M surveys as outlined in the previous portion of the plan and interpretation of results, meetings will be held with the State, DRCOG, and other interested parties to establish follow-up assistance. These meetings will be held periodically as program develops.

## Results

1. Improved plant performance and effluent quality.
2. Trained and competent operators to maintain waste water treatment plants.
3. Provide basic education and training leading to operator certification.
4. More effective operation of facilities.

## Milestones

No specific milestones can be established at this time, however, follow-up activities initiated in FY 72 at Brighton, Englewood, Littleton, South Lakewood and Longmont will continue.

Project Manager: Elmer M. Chenault, Chief, Manpower Development and Training Branch.

3.4 Expedite Denver Metro No. 1 Waste Water Facility Grant

## Purpose of Plan

To expedite construction and completion of needed additions to the Metropolitan Denver Sewage Disposal District Number One plant at the earliest practical date.

## Need for the Plan

The Metro-Denver Sewage Disposal District No. 1 treatment project consists of a $30,000,000 improvement program to increase plant capacity, upgrade treatment efficiency, and provide for sludge disposal. Since the plant has considerably more impact on water quality in the South Platte River than any other plant in the basin, water quality improvement on the main stem in the Denver metropolitan area will be closely related to the date the project can be completed. The project was submitted in two parts, but logically it should be handled as a single project. A grant offer has been made for part of the project with an estimated $9,000,000 cost and the scope of this grant should be expanded to include the entire project and the grant increased accordingly.

Based on the present grant, the District is committed to placing the project under construction in approximately 540 days after the grant offer was accepted, which would be approximately April 15, 1973. Slippage has occurred to date, in that the feasibility report was not received

until April 1972. Assumming a design time of about one year and final acceptance of the report by the District Board by July 1972, authorization to the Consulting Engineer would be forthcoming in July 1972.

Financial limitations of the District preclude authorizing the Consulting Engineer to proceed until funds are made available. Source of funds is dependent on passage by the electorate of a bond authorization which by best estimates available would be held in January 1973.

Pending Federal legislation as expressed in the Senate version holds out some hope of an advance to communities for preparation of plans and specifications after Federal approval of the feasibility report.

## Approval and Milestones

1. Maintain close contact with the project through attendance at regular board meetings.
2. Initiate an early meeting of appropriate EPA, Colorado Department of Health and Metro District staff to resolve any differences that may exist as to the degree of treatment required and the type of facilities that will be approved for a construction grant.
3. Prepare Impact Statement as required by the National Environmental Policy Act at the earliest practicable date.
4. Increase the scope covered by the existing grant offer and increase the grant to cover the increased scope. (by Dec. 1, 1972)

5. Explore with the District possible means of authorizing preparation of final plans and specifications before the bond election is held.

6. Reduce the time required for approval of plans and specifications through pre-construction meetings between regulatory agency personnel, District personnel, and the District consultants.

Project Manager: William H. Hormberg, Municipal Waste Water Branch

3.5 Develop efficient utility management program for the Denver public waste water treatment system.

## Need for the Plan

The present water and sewage rate structure of Denver-Metro Sewage Disposal District No. 1 does not discourage excessive water use and thus, may contribute to overloadings in the system and to the need for larger than necessary treatment facilities. It also does not provide adequate financing for necessary upgrading, replacement, and expansion of the treatment system.

## Approach and Milestones

Conduct a study to address the following major points:

1. Application of a utility management concept to the waste water treatment system.
2. The adequacy of the charges and the institutional arrangement of the system for meeting financial requirements in operation, maintenance, upgrading, replacement, and expansion in the waste water treatment system.

The study will be conducted by contract administered by the assigned project officer. Coordination is necessary between the Planning, Water Supply, and Municipal Waste Water Sections of the Air and Water Programs Division. External coordination is necessary with the Denver Regional DRCOG 3(c) project and the Denver Metropolitan Sewage Disposal District No. 1 to ensure implementation of study findings.

The study will provide a financing system capable of meeting the present and future waste water treatment needs. Such a financing system would incorporate the Federal, State, local, residential, industrial, and commercial responsibilities for waste water loadings, growth, and upgrading into a revenue-producing and capital-raising arrangement.

Rate structures geared to users' loading should result in a reduction in total loadings on the treatment system, thereby reducing immediate overloadings and future plant requirements.

The following milestones are incorporated in the plan:

1. Meet with Denver Metro and 3(c) project manager to discuss ongoing and pending utility management studies. January 21, 1972.
2. Determine required contract needs to supplement ongoing and pending studies. March 1, 1972.
3. Discuss EPA contract scope with Metro interests and finalize request for contract proposals. March 15, 1972.
4. Select contractor. June 15, 1972.
5. Initiate contract. July 1, 1972.
6. Complete study. December 1, 1972.
7. Present results to Denver Metropolitan interests and negotiate for adoption of results. January 15, 1973.

Project Manager: Patrick J. Godsil, Planning Section

3.6 Develop program on optimizing water use, emphasizing reduction in water usage and recycling.

Purpose of the Plan

To decrease water use and institute an effective reuse program, so as to decrease future water diversions.

Need for the Plan

Denver's annual per capita water use is about 225 gallons per day. This is higher than the national average but is not inconsistent with other municipalities in Region VIII.

About the only large industrial influence on Denver water usage is the Public Service Company's plant, which uses large quantities of water for cooling purposes. Therefore, most of the high water use is due to domestic uses, lawn watering and landscape irrigation, especially during the summer and fall months.

Another important factor is that only 33% of Denver's water connections are metered. Generally, unmetered accounts show larger water use than those that are metered because of the lower "flat rate" structure. The experience has been that once meters are installed the water use goes down.

Even if metering and water conservation efforts realized significant decreases in water use, they would not offset the burgeoning M & I demands of the projected population and industrial growth for the Denver-Metro area. An additional source being extensively studied by the Denver Water Board is water reuse. However, based on the intensive studies being conducted at Lake Tahoe, Windhoek, South Africa and Dallas, Texas, it will be some time before reclaimed wastewater is used directly for domestic purposes because:

1. Much better methods for sampling and testing are needed for virus. Viral diseases such as infectious hepatitis are quite serious and the etiological agents of these diseases have been found in highly treated wastewaters.

2. More research must be done on the buildup of trace organics and inorganics, including carcinogens and toxic synthetics such as polychlorinated piphenyls.

3. The reliability of wastewater reclamation plants to consistently produce a quality effluent is being questioned due to faulty maintenance and improper operation.

In view of these public health considerations, this Agency must take the stand that the use of reclaimed wastewaters for public water supply purposes should be deferred until research and development demonstrates that such use will not endanger the health of the public and adversely affect the potability of the water supply.

However, domestic use of water (i.e., drinking, bathing, dishwashing) is actually a small part of a muncipality's total water requirement. Definite possibilities do exist for the use of reclaimed water by those industries which do not require a high quality process water and for such uses as landscape irrigation on public parks, golf courses and freeways.

The Denver Water Board has recognized these possibilities and is currently conducting an in-depth study of the reuse situation. This study involves a wastewater reclamation pilot plant, an evaluation of where the reclaimed water could be used and how the public would accept such a concept.

## Approach

Optimizing water use in the Denver area will be a laborious task. First, reliable water use data will have to be gathered in order to determine where the major efforts should be directed. Therefore, enlisting the support of the water utilities is all important. On the basis of the data, public information programs could be directed toward saving water by better lawn watering and in-the-home practices. Tips on optimum lawn watering rates and frequencies will be developed with the assistance of the county extension service. The beneficial effects upon the lawn from proper watering (deeper rooting, less insect infestation, etc.) should be stressed in addition to the economical and ecological benefits. Eliminating waste in the home is much harder to accomplish, but tips could be developed on how to save water in everyday washing, bathing, etc.

The Denver-Metro area has many parks, public golf courses and green belt areas which require extensive watering during the summer. These are for the enjoyment of the public and there would certainly be an outcry if they were allowed to burn up. However, water saving could be gained if tighter controls were used. Cooperation between the water utility and the respective city parks department is essential in working out a proper watering schedule. The approach would be to set up a trial meeting between the two (with the extension service involved) to explore the possibilities of cutting down on water use. If successful, other meetings could be held.

The Denver metering policy will be reviewed. The Water Board will be urged to inaugurate a program to reach near 100% metered connections. (Any changes which this Agency might recommend in the metering practices would not be binding on the utility since there is no legal basis to do this.)

Water reuse is being studied for implementation in the Denver area during the 1980's. Any public information program will be coordinated with the Denver Water Board. The purpose will be to illustrate to industry and the public why resue is necessary, what types are being considered and what effect this will have on them.

Milestones

The following milestones are incorporated in the plan:

1. Contact State and local health departments, Denver Regional Council of Governments and water utilities to explain water optimization plan. February 5, 1972.

2. Review detailed water usage data of the various billing categories, such as single residences, parks, industrial, commercial, and wholesale accounts. Detailed data would also need to be reviewed from sewage treatment plants as to input flows to be able to determine consumptive and non-consumptive water use when compared with data obtained from the Denver Water Board. March 1, 1972.

3. Meet with the Denver Water Board to discuss ways of optimizing water usage and how an information program could be mutually beneficial.

Gaining their assistance and support at this stage is critical. March 15, 1972.

4. Develop a public information program on the basics of reducing water usage and possible ways of reuse. June 1, 1972.

5. Continue to coordinate with the Denver Water Board and assist them with their program of public and industrial acceptance. To make available to them any EPA research results relevant to water reuse.

Project Manager: Albert V. Soukup, Water Supply Branch

## 3.7 Process Municipal Waste Water Treatment Construction Grants

### Purpose of Plan

To utilize the municipal construction grants program as an effective tool in meeting improved standards of quality in the South Platte River Basin through expansion of plants to meet needs for growth and development and upgrading the degree of treatment provided.

### Need For the Plan

Municipal wastes are the most widespread and constitute the most important source of water pollution in the South Platte River Basin. Many of the industrial wastes in the Basin are treated in municipal systems. Since passage of Public Law 84-660 in 1956, the Federal government has assisted local municipalities with the burden of financing the construction of needed waste treatment works. Pending legislation would substantially increase the percentage of construction costs to be financed from federal grants. In addition, the 1972 Colorado legislature approved and the Governor signed into law an appropriation of 2.5 million dollars for the state share of a matching Federal-State funding program. There is a strong need to utilize this program effectively in assisting local communities with the cost of financing needed waste treatment projects and to insure that projects to be constructed adequality provide for the necessary degree of treatment and upgrading of water quality.

## Approach

1. Meetings will be held periodically with the staff of the Colorado Department of Health to establish at the earliest possible date the municipal waste treatment needs of the communities in the basin. In addition, information regarding treatment needs will be obtained from O & M surveys of plants in the basin and from surveillance of water quality management plans developed for the basin. This will result in much improved and more reliable one and five year needs lists and provide an opportunity for early involvement in the planning of projects.

2. Pre-application and pre-design conferences will be held with communities needing treatment works improvements, their consultants and the Colorado Department of Health staff to furnish pre-application assistance, and to expedite preparation of applications, engineering studies and subsequent processing of applications.

3. Requests will be made for submission of preliminary engineering reports to the Environmental Protection Agency at the time of completion of such reports. This will permit EPA comments regarding design details of projects early in the planning process, and it will permit a much improved records system regarding numbers of projects planned and their anticipated costs. New technology will be encouraged as appropriate at the time such reports are reviewed and during pre-design conferences.

4. Where appropriate, and as opportunities occur, assistance will be given with the development of joint demonstration - construction grant projects involving new technology and improved methods of waste water treatment applicable to conditions in the South Platte River Basin.

## Interrelationships

Very close coordination must be maintained with the Planning Branch, Air and Water Programs Division, EPA, with the Colorado Department of Health and with local and regional water quality management planning agencies since all are involved in project planning and development.

## Results

1. Expeditious development of grant projects and subsequent processing of applications.
2. Development of highly effective treatment projects using the best technology available.

## Milestones

Processing municipal waste water treatment grants is a continuous process. Specific milestones will be developed as appropriate.

Project Manager: William H. Bertram, Municipal Waste Water Branch

## 3.8 Process 50 Permits

### Purpose of the Plan

This plan is to identify and describe the role and accomplishments of the Enforcement Division in reducing the wastes discharged to the South Platte River. Wastewater flows and concentrations will be reduced through the use of commitment letters and the Permit Program (assuming the Kalur case decision is reversed or new legislation is enacted) by setting special conditions requiring industries to meet water quality standards and to discharge effluents that have received no less than best practicable treatment. In many cases, industries will be placed on implementation schedules that will extend for one year or more.

### Approach

The work will be carried out principally by the Enforcement Division with the aid of the Surveillance and Analysis Division, Management Division (Computer Branch), and Air and Water Programs Division (Planning Section).

Inspections in the Denver SMSA will be carried out by the Surveillance and Analysis Division and coordinated with the Colorado Water Pollution Control Commission, Denver County Health Department, Tri-County Health Department (Adams, Arapahoe, and Douglas), and the Jefferson County Health Department. Management Division support is planned for such items as updating and implementing computer programs, key punching data, etc. Water quality standards, metropolitan planning outputs, and systems analysis work are expected from the Air and Water Programs Division.

## Milestones

The following milestones constitute the Enforcement Division's plan of action that will, in effect, reduce the industrial waste discharges to the South Platte River and aid in upgrading the quality of the water. It is estimated that the special conditions incorporated in the permits and commitment letters reduce the $BOD_5$ discharged to the river by 45,000 lb/day by December 1972, and 65,000 lb/day by December 1976.

1. Interim effluent monitoring plan developed for the major industries, April 1, 1972; plan finalized on July 1, 1972.
2. Technical reviews of applications from significant industries in the South Platte River Basin completed; special permit conditions set to meet water quality standards, best practicable levels of treatment, planning and institutional requirements - June 1, 1972.
3. Commitment letters obtained from thirty major dischargers in the South Platte River Basin by June 1973.

## Unresolved Policy Issues

In a recent court decision, a Federal judge concluded that permits could not be issued for industrial wastes discharged to non-navigable streams. In addition, no permits could be issued for discharges to navigable streams unless an environmental impact statement preceded the issuance of each permit. Both facets of this decision could have far-reaching impacts on the South Platte River, which is considered to be a navigable stream by EPA. The decision is being appealed and, in the meantime, the emphasis has been on obtaining commitment letters.

Under existing policy developed between the Administrator and the House Agriculture Committee, the Permit Program has been constrained with regard to its applicability to feed lot operations. Only those feed lots having more than 1,000 animal units and having man-made point discharges of wastes presently fall under the Permit Program. The number of animal units criteria in this policy removes about 90% of the Basin's feed lots from the Refuse Act authority, and the point-discharge stipulation removes most of the remaining large operations that have diffuse discharges and cause water quality problems in the South Platte River Basin.

Project Manager: E. Dildine, Chief, Permits Branch

3.9 Sample and monitor industrial outfalls and ambient stream conditions.

## Approach

Review water quality data collected along the South Platte River and its tributaries to determine existing quality and identify sources of contaminants. Field studies will be conducted on reaches of the main stem and tributaries for which sufficient data are not available. Inspections of industries will be conducted to ensure full compliance with the Permits Program. Where necessary, industrial outfalls will be sampled to determine quality characteristics and their impact on receiving waters.

## Milestones

1. Existing water quality of the South Platte River and its tributaries will be determined from the Division of Field Investigations report on the 1971 water quality investigation in the South Platte River Basin, STORET data, and other pertinent sources. Although all the water parameters for which data are available will be summarized and displayed in appropriate graphical arrays, the parameters of critical importance are total and fecal coliform bacteria, dissolved oxygen, biochemical oxygen demand (BOD), and nutrients. The Surveillance and Analysis Division will encourage and provide support to other governmental agencies conducting monitoring activities in the Basin to place their past and any future data in the STORET System. May 1, 1972.

Project Leader: Lester D. Sprenger

2. In accordance with the recommendations of the Permits Branch, Enforcement Division, inspections of suspected industries will be carried out to determine compliance or the lack thereof. Effluent studies will be conducted in those cases where the company-furnished data on effluent characteristics are incomplete or suspect.

This activity was initiated in December 1971. By January 15, 1972, fifty-eight industries had been inspected and one field study completed (Allied Chemical's Jamestown Mine--discharge to Little James Creek). (Beginning December 1971 and initial effluent monitoring completed December 1972.)

Project Leader: Lester D. Sprenger

3. Coincident with Milestone 1 (above), water quality data will be reviewed to identify the areas of the South Platte River and tributary streams for which the available information is inadequate. Correspondingly, a field investigations program will be designed, describing the time schedule, sampling locations, and the appropriate parameters for fully describing existing quality and sources of contaminants.

One area of primary concern will be the South Platte River upstream from Denver. In order to implement the objective of reductions in fecal coliforms, a field study will be necessary to determine the primary source--effluents from municipal plants, agriculture, or unreliable sampling and analysis procedures. May 10, 1972.

Project Leader: John E. Hardaway

4. Commencing on or about May 10, field studies (if necessary) will be started by the Surveillance and Analysis Division to provide the necessary analytical data. Although it is possible that the Surveillance and Analysis Division may be able to meet all existing commitments with judicious scheduling of sample analyses, the need to obtain assistance from one of the two national enforcement groups (DFI--Cincinnati or Denver) in order to meet all Regional commitments cannot be totally discounted. September 1, 1972.

Project Leader: John R. Tilstra

5. A comprehensive report will be prepared wherein data obtained from the Field investigations program, as well as pre-existing information, will be formalized in appropriate graphical and statistical arrays to describe the current water quality, sources of contaminants, and the impact of industrial and municipal outfalls on receiving waters. October 1, 1972.

Project Leader: John E. Hardaway

6. The existing long-term systematic monitoring program for the South Platte River Basin will be upgraded as necessary to determine the success of the South Platte water quality improvement strategy. This will be a coordinated and mutually cooperative study with the State of Colorado and provide monitoring assistance to the State.

Incoming data from the developed monitoring program will be received and pollution alert notices forwarded to the Enforcement Division for action or follow-up investigations by the Surveillance and Analysis Division. By June 1, 1972, five such notices in the Basin had been

issued. (Beginning September 1, 1972, and continuous.)

Project Leader: Lester D. Sprenger

7. Plan and conduct as necessary indepth stream surveys to document specific cleanup actions and the results obtained from the implementations. (Dates as required.)

Project Leader: John E. Hardaway

Project Manager: John E. Hardaway, Surveillance and Analysis Division

## 3.10 Hold Enforcement Conference

### Approach

Reconvene South Platte River Enforcement Conference to present the report of the 1971-72 water quality survey and set future goals for future improvements in water quality.

### Milestones

1. Complete field survey by NFIC-D; January 1972.
2. Complete draft of report; April 30, 1972.
3. Forward final survey report to conferees for review; July 1, 1972.
4. Publish the public notice for reconvening the conference; July 1, 1972.
5. Reconvene the Conference; August 22, 1972.
6. Administrator's approval of the conferees recommendations; October 1, 1972.
7. Begin implementation of the conferees recommendations; October 15, 1972.

Project Manager: Thomas T. Rogers, Chief, Enforcement Branch

## 3.11 Individual Enforcement Actions

### Approach

The following enforcement actions will result in an upgrading of the water quality in the South Platte River below Denver.

### Milestones

1. As a result of the issuance of a 180-day notice in February 1972, adequate waste treatment facilities will be in operation at the Great Western Sugar Company plant at Ovid, Colorado; and $BOD_5$ load to the South Platte River should be reduced by 19,000 lb/day; October 1972. Fecal coliform daily averages should be reduced by approximately 98%.
2. As a result of the issuance of a 180-day notice in February 1972, adequate waste treatment facilities will be on line at the Great Western Sugar Company plant at Greeley, Colorado, which should reduce $BOD_5$ load to the Cache La Poudre River and South Platte River by 25,000 lb/day; October 1972. Fecal coliform daily averages in the effluent should be reduced by approximately 98%.
3. Oil pollution of the South Platte River casued by seepage from Burlington-Northern Railroad yards, Denver, Colorado, fully abated; September 1972.
4. Adequate waste treatment facilities in operation at Great Western Sugar Company Refinery, Johnstown, Colorado; and $BOD_5$ level to Big Thompson and South Platte Rivers reduced by 5,700 lb/day; June 1973.

5. Recommend at Enforcement Conference to be held in August 1972, adequate waste treatment facilities be installed in the municipalities of Fort Morgan, Sterling, and Brush, Colorado, by July 1974 to reduce $BOD_5$ level to South Platte River by 19,500 lb/day.

6. Letters of commitment will be negotiated between all major industrial dischargers subject to the Refuse Act Permit Program and the EPA that will result in a significant reduction in the $BOD_5$, solids, and oil and grease load discharged to the South Platte River; June 1973.

Project Manager: Thomas T. Rogers, Chief, Enforcement Branch

### 3.11.1 Enforcement Actions Against Illegal Discharges to Storm Sewers - Denver Metropolitan Area

#### Approach

Historical data on the quality of storm runoff indicates the presence of many illegal discharges to the storm sewers. The following enforcement actions will result in abatement of these discharges and on upgrading of the South Platte River in the Denver Metropolitan area.

#### Milestones

1. Develop an agreement for a cooperative sewer search and identification program with the City and County of Denver, Tri-County Health Department, and the Colorado Department of Health; July 1972.
2. Develop plan to pinpoint illegal discharges and secure evidence for prosecution; August 1972.
3. Complete search and identification program for illegal discharges; December 1973.
4. Abate discharges from estimated fifty illegal dischargers; December 1973.
5. Reduce pollution load to South Platte River by estimated 15,000 lb/$BOD_5$ and 1,500 gallons of oil yearly; December 1973.

Project Manager: Thomas T. Rogers, Chief, Enforcement Branch

3.12 Ensure development of water quality management plans for the South Platte River Basin, the Denver SMSA, and the Larimer-Weld Counties regional planning areas as required by 18CFR601.

## Purpose of Plan

Water Quality Management plans are required to ensure that wastewater facility construction grants are committed in a cost effective manner and in concert with actions to abate other sources of pollution in the basin. Basic outputs from these plans are requirements for wastewater facility regionalization (physical and administrative), allowable waste discharges for point sources which will allow for meeting water quality standards, and compliance schedules for all point sources in the basin.

## Approach and Milestones

The metropolitan plan for Metro Denver will be completed by the DRCOG 3(c). A regional plan will be developed for Larimer and Weld counties under the direction of the Larimer-Weld Counties Planning Commission. The Basin plan will be formulated by the State Department of Health, Water Pollution Control Division. Regional assistance through direct personnel and by appropriate planning grants will be utilized. Assistance will be provided via an EPA contract for implementing mathematical modeling to determine allowable waste loads throughout the basin. Appropriate regional program activities will be coordinated to provide maximum EPA input to planning efforts.

Commence intensive assistance to State and Larimer-Weld Counties Planning Commission in support of basin and regional planning efforts on July 1, 1972.

Complete basin and regional plans by July 1, 1973.

Unresolved Policy Issues and Constraints

State and local planning jurisdictions do not have resources to meet rigid accomplishment dates. At present, EPA does not have adequate resources to assure meeting the rigid accomplishment date.

Project Manager: Patrick J. Godsil, Planning Section

3.13 Supplement DRCOG 3(c) planning activity to achieve allied regional objectives for the South Platte Basin.

## Purpose of the Plan

The planning grant activity now underway for the Denver SMSA is limited in its ability to achieve all Region VIII objectives for the metropolitan area. Early review indicates that areas of work allied to the DRCOG 3(c) work program which requires Region VIII supplemental resources include:

1. Development of effluent standards for all discharges in the study area.
2. Establishment of the location and responsible party of all industrial discharges within the study area.
3. Incorporation of mountain areas in detailed plan development.

## Approach and Milestones

A regional liaison officer (George Hartmann, Planning Branch) has been assigned to provide continuous monitoring of the project. A regional task force has been established to assist with providing regional assistance to the project.

First year activities and recommended grant amendments will be developed prior to when second year grant award is made on July 1, 1972.

## 3.14 Develop Control Program for Oil and Hazardous Materials.

### Purpose of the Plan

To protect the water quality and prevent damage to beneficial uses in the South Platte from spills of pollutional materials into the South Platte and its tributaries.

### Need for the Plan

Spills of pollutional materials have been experienced in the past. These have caused problems at water treatment facilities, have interfered with aesthetic enjoyment of the streams and undoubtedly have had a detrimental effect on aquatic life. As abatement and control measures are taken to upgrade municipal and industrial effluents, periodic spills could have a more dramatic effect on stream biota and other legitimate uses and could largely negate the benefits from significant investments to improve effluent quality.

### Approach and Milestones

Two approaches are being pursued. The first is the development of a mutual aid group, consisting of Federal, State, and local government agencies and companies in the area. This group will develop plans for notification and reaction to emergency spills, train personnel, and maintain equipment which will be able to respond to spills immediately with the capability of containing the spilled material. These groups will develop, within the group or by outside assistance, the capability of removing the spilled material, or of treating it so as to negate its effect on the environment.

The second approach is the development of contingency plans in the South Platte Basin. The procedure to be followed will vary, depending on whether the potential hazard relates to a discharge for which a Refuse Act Permit is required.

Where a permit is required, the application will be reviewed for installation of "fail-safe" systems to avoid spills and accidental discharges. Permit conditions will be developed requiring adequate controls where indicated.

Where hazardous materials are stored, warehoused, or otherwise not associated with a discharge for which a Refuse Act Permit is required, an inventory of the locations and quantities of such materials will be developed cooperatively with the State, DRCOG, other governmental entities and private industry.

Milestones

The following are milestones in the implementation of the plan:

1. Development of a Mutual Aid Group or groups.
    a. Primary contact, February 15, 1972.
    b. Formation of group, 1st meeting - May 1, 1972.
    c. Basic development of group, contingency plan, obtainment of equipment and training of personnel - May 1, 1973.
2. Contingency plan from nondischarging facilities.
    a. Inventory started, March 1, 1972.
    b. Primary sources contacted, December 1, 1972.
    c. Most, if not all, sources contacted, June 1, 1973.
    d. Plans received from primary sources, September 1, 1973.
    e. Investigation of primary sources, December 1, 1973.

f. Plans received from most or all sources, December 31, 1973.

g. Investigation of all other sources, March 1, 1973.

Unresolved Policies on Issues

For hazardous materials not associated with a discharge for which a Refuse Act Permit is required, authority to obtain an inventory of materials will presumably rest on the basic right of the State to act to protect the health and welfare of citizens of the state. There may be some question as to whether a contingency plan can be required under present state legal authority. If such plans can be requested only on a cooperative basis, considerable cooperation by industry can still be expected.

Project Manager: Richard M. Jones, Surveillance and Analysis Division

APPENDIX A

## PLANNED ACCOMPLISHMENTS SCHEDULE

| 1. Type of Plan a. ☐ Sub-Element b. ☐ Part. Sub-Elem. c. ☐ Geo. Area | 2. Accomplish. Plan Title Priority Basin | 3. Sub-Element No. | 4. Sheet No. 1 of 2 |
|---|---|---|---|
| | 5. Geographical Area Title So. Platte River Basin | 6. Geo. Area Code | 7. Priority |

| 8. Code | 9. No. | 10. Sched Date of Comp. | 11. PLANNED ACCOMPLISHMENTS |
|---|---|---|---|
| | 1 | Nov. 1972 | Upgrade Classification of South Platte |
| | 2 | Oct. 1972 | Hold Negotiations |
| | 3 | - | Hold Hearings (If Required) |
| | 4 | Oct. 1972 | Develop Public Information Program |
| | 5 | June 1975 | Survey Wastewater Treatment Plants |
| | 6 | Continuous | Provide Training and Technical Assistance |
| | 7 | Jan. 1973 | Expedite Denver-Metro #1 Wastewater Facility Grant |
| | 8 | Dec. 1972 | Develop Efficient Utility Management Program |
| | 9 | July 1972 | Develop Program on Optimizing Water Use |
| | 10 | Continuous | Process Municipal Wastewater Treatment Construction Grants |
| | 11 | Continuous | Process Fifty Permits |
| | 12 | Continuous | Sample & Monitor Industrial Outfalls and Ambient Stream Conditions |
| | 13 | Aug. 1972 | Hold Enforcement Conference |
| | 14 | Continuous | Individual Enforcement Actions |
| | 15 | July 1973 | Ensure Development of Water Quality Management Plans |
| | | | |

| 12. FY 1973 | | 13. FY 1974 | | 14. Prepared by & Date | 15. Reviewed by & Date | 16. Approved for RPIO |
|---|---|---|---|---|---|---|
| a. | b. | a. | b. | Patrick Godsil 6/5/72 | | |

Planned Accomplishments

## PLANNED ACCOMPLISHMENTS SCHEDULE

| 1. Type of Plan: a. ☐ Sub-Element; b. ☐ Part. Sub-Elem.; c. ☐ Geo. Area | 2. Accomplish. Plan Title: Priority Basin | 3. Sub-Element No. | 4. Sheet No: 2 of 2 |
|---|---|---|---|
| | 5. Geographical Area Title: So. Platte River Basin | 6. Geo. Area Code | 7. Priority |

| 8. Code | 9. No. | 10. Sched Date of Comp. | 11. PLANNED ACCOMPLISHMENTS |
|---|---|---|---|
| | 16 | July 1972 | Supplement DRCOG Sect. 3(c) Planning Grant |
| | 17 | Dec. 1973 | Develop Control Program for Oil & Hazardous Materials |
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| 12. FY 1973 | | 13. FY 1974 | | 14. Prepared by & Date | 15. Reviewed by & Date | 16. Approved for RPIO |
|---|---|---|---|---|---|---|
| a. | b. | a. | b. | | | |

Planned Accomplishments

APPENDIX B

Name of Basin SOUTH PLATTE RIVER

STORET Minor Basin ID No. 0910
Region VIII
State(s) Colorado

1. Area covered:

(Reach #2)

Bowles Avenue to Exposition Avenue

2. Water quality objectives:

| | (a) Current criteria | (b) EPA Objective: Minimum Acceptable Ambient Level | (c) Actual Level at Worst Time of Yr. | Accuracy (% ±) |
|---|---|---|---|---|
| Measure #1 | mg/l | mg/l | mg/l | ± % |
| Measure #2 DO | 6.0 | 6.0 | 2.4 | 0.192 |
| etc. Fecal Coliform | 1000/100 ml. | 1000/100 ml. | 17,000/100 ml. | 1877 |

3. Estimated pollution load--all sources (average FY 72):

| | Load | Accuracy (% ±) |
|---|---|---|
| Pollutant #1 | pounds/day | ± % |
| Pollutant #2 $BOD_5$ | 8,000 | 10% |
| etc. Fecal Colif. | 17,000/100 ml. instream | |

4. Estimated pollution load reduction required to meet EPA water quality objectives derived from 2(c) - 2(b):

| | Required Reduction | Accuracy (% ±) |
|---|---|---|
| Pollutant #1 | pounds/day | ± % |
| Pollutant #2 $BOD_5$ | 4,000 | 25% |
| etc. Fecal Colif. | 16,000/100 ml. instream | |

5. Reduction firmly committed by FY 72 and prior year actions:

| | Year of Actual Reduction | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 $BOD_5$ | 5,000 | 5,000 | 8,000 | 8,000 |
| etc. Fecal Coliform | 0 | 0 | 0 | 0 |

6. Additional reductions to be obtained by FY 73 and FY 74 commitments:

| | Year of Actual Reduction | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 $BOD_5$ | | 2,000 | 3,000 | 6,000 |
| etc. Fecal Coliform | 0 | 0 | 0 | 16,000/100 ml. |

Figure 10. Priority Basin Work Sheet

7. Increases in pollution discharges expected:

| | Year of Actual Increase | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 $BOD_5$ | 2,000 | 5,000 | 7,000 | 10,000 |
| etc. Fecal Coliform | 0 | 0 | 0 | 0 |

8. Total reductions to be obtained--sum of 5 and 6 above:

| | Year of Actual Reduction | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 $BOD_5$ | 5,000 | 7,000 | 11,000 | 14,000 |
| etc. Fecal Coliform | 0 | 0 | 0 | 16,000/100 ml. |

9. Total reductions required--sum of 4 and 7 above:

| | Year of Actual Reduction | | | | |
|---|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 | |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day | |
| Pollutant #2 $BOD_5$ | 6,000 | 9,000 | 11,000 | 14,000 | ±25% |
| etc. Fecal Coliform | 0 | 0 | 0 | 16,000/100 ml. | |

10. Year in which minimum acceptable water quality levels are to be achieved--compare 8 and 9 above:

1976

11. If figures for items 2 through 7 above are not available, please provide estimate of when they will become available through monitoring and other activities:

Are items 3, 5, and 6 above derived from detailed discharger inventories? (Estimates from rough materials balance and flow calculations are acceptable.)

Yes

12. Key pollutants, if any, for which a weight or other quantity measure is not appropriate:

Figure 10 - Continued

Name of Basin SOUTH PLATTE RIVER

ID No. 0910
Region VIII
State(s) Colorado

1. Area covered:

(Reach #3)

Exposition Avenue to York Street (Data at York taken at Franklin St.)

2. Water quality objectives:

| | (a) Current criteria | (b) EPA Objective: Minimum Acceptable Ambient Level | (c) Actual Level at Worst Time of Yr. | Accuracy (% ±) |
|---|---|---|---|---|
| Measure #1 | mg/l | mg/l | mg/l | ± % |
| Measure #2 DO | 5.0 | 5.0 | 2.2 | 0.188 |
| etc. Fecal Coliform | 1000/100 ml. | 1000/100 ml. | 120,000/100 ml. | 1518 |

3. Estimated pollution load--all sources (average FY 72):

| | Load | Accuracy (% ±) |
|---|---|---|
| Pollutant #1 | pounds/day | ± % |
| Pollutant #2 $BOD_5$ | 1,000 | 10% |
| etc. Fecal Colif. | 120,000/100 ml. | |

4. Estimated pollution load reduction required to meet EPA water quality objectives derived from 2(c) - 2(b):

| | Required Reduction | Accuracy (% ±) |
|---|---|---|
| Pollutant #1 | pounds/day | ± % |
| Pollutant #2 Fecal Colif. | 119,000/100 ml. | 10% |
| etc. $BOD_5$ | Reduction in Bowles to Exposition Reach (Reach #2) should be sufficient to meet DO standard. | |

5. Reduction firmly committed by FY 72 and prior year actions:

| | Year of Actual Reduction | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 $BOD_5$ | 50 | 50 | 50 | 50 |
| etc. Fecal Colif. | 0 | 0 | 0 | 0 |

6. Additional reductions to be obtained by FY 73 and FY 74 commitments:

| | Year of Actual Reduction | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 $BOD_5$ | 0 | 0 | 0 | 0 |
| etc. Fecal Colif. | | | | 119,000/100 ml. |

Figure 10. Priority Basin Work Sheet

7. Increases in pollution discharges expected:

| | | Year of Actual Increase | | | |
|---|---|---|---|---|---|
| | | FY 73 | FY 74 | FY 75 | FY 76 |
| | | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #1 | | | | | |
| Pollutant #2 | $BOD_5$ | 50 | 60 | 70 | 80 |
| etc. | Fecal Colif. | 0 | 0 | 0 | 0 |

8. Total reductions to be obtained--sum of 5 and 6 above:

| | | Year of Actual Reduction | | | |
|---|---|---|---|---|---|
| | | FY 73 | FY 74 | FY 75 | FY 76 |
| | | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #1 | | | | | |
| Pollutant #2 | $BOD_5$ | 50 | 50 | 50 | 50 |
| etc. | | | | | |
| | Fecal Colif. | 0 | 0 | 0 | 119,000/100 ml |

9. Total reductions required--sum of 4 and 7 above:

| | | Year of Actual Reduction | | | |
|---|---|---|---|---|---|
| | | FY 73 | FY 74 | FY 75 | FY 76 |
| | | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #1 | | | | | |
| Pollutant #2 | $BOD_5$ | Reduction in Bowles to Exposition Reach (Reach #2) should be sufficient to meet water quality standards. | | | |
| etc. | | | | | |
| | Fecal Colif. | 0 | 0 | 0 | 119,000/100 ml |

10. Year in which minimum acceptable water quality levels are to be achieved--compare 8 and 9 above:

1976

11. If figures for items 2 through 7 above are not available, please provide estimate of when they will become available through monitoring and other activities:

Are items 3, 5, and 6 above derived from detailed discharger inventories? (Estimates from rough materials balance and flow calculations are acceptable.)

Yes

12. Key pollutants, if any, for which a weight or other quantity measure is not appropriate:

Figure 10 - Continued

STORET Minor Basin ID No. 0910

Name of Basin SOUTH PLATTE RIVER

Region VIII

State(s) Colorado

1. Area covered:

(Reach #4)

York Street to Henderson, Colorado

2. Water quality objectives:

| | (a) Current criteria | (b) EPA Objective: Minimum Acceptable Ambient Level | (c) Actual Level at Worst Time of Yr. | Standard Error |
|---|---|---|---|---|
| Measure #1 | mg/l | mg/l | mg/l | |
| Measure #2 DO | 3.0 | 5.0 | 2.4 | 0.343 |
| etc. Fecal Colif. | | 1000/100 ml. | 109,000/100 ml | 18.595 |

3. Estimated pollution load--all sources (average FY 72):

| | Load | Accuracy (% ±) |
|---|---|---|
| Pollutant #1 | pounds/day | ± % |
| Pollutant #2 $BOD_5$ | 44,000 | 20% |
| etc. Fecal Colif. | 109,000/100 ml in stream | |

4. Estimated pollution load reduction required to meet EPA water quality objectives derived from 2(c) - 2(b):

| | Required Reduction | Accuracy (% ±) |
|---|---|---|
| Pollutant #1 | pounds/day | ± % |
| Pollutant #2 $BOD_5$ (for 5.0 mg/l DO) | 25,000 (Based on Effluent of Metro Denver <10 mg/l) | |
| etc. Fecal Colif. | 108,000/100 ml | |

5. Reduction firmly committed by FY 72 and prior year actions:

| | Year of Actual Reduction | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 $BOD_5$ | 4,500 | 4,500 | 4,500 | 12,000 |
| etc. Fecal Colif. | 0 | 0 | 0 | 0 |

6. Additional reductions to be obtained by FY 73 and FY 74 commitments:

| | Year of Actual Reduction | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 $BOD_5$ | 0 | 0 | 0 | 13,000 |
| etc. Fecal Colif. | 0 | 0 | 0 | 108,000/100 ml |

Figure 10. Priority Basin Work Sheet

7. Increases in pollution discharges expected:

| | Year of Actual Increase | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #1 | 6,000 | 12,000 | 18,000 | 24,000 |
| Pollutant #2 $BOD_5$ | 0 | 0 | 0 | 0 |
| etc. Fecal Colif. | | | | |

8. Total reductions to be obtained--sum of 5 and 6 above:

| | Year of Actual Reduction | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #1 | 4,500 | 4,500 | 4,500 | 25,000 |
| Pollutant #2 $BOD_5$ | 0 | 0 | 0 | 108,000/100 ml |
| etc. Fecal Colif. | | | | |

9. Total reductions required--sum of 4 and 7 above:

| | Year of Actual Reduction | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #1 | 31,000 | 37,000 | 43,000 | 49,000 |
| Pollutant #2 $BOD_5$ (5 mg/l DO) | 108,000/ 100 ml. | 108,000/ 100 ml. | 108,000/ 100 m. | 108,000/ 100 ml. |
| etc. Fecal Colif. | | | | |

10. Year in which minimum acceptable water quality levels are to be achieved--compare 8 and 9 above:
In order to achieve 5.0 mg/l DO below Denver Metro it will be necessary to go to lower than 10 mg/l $BOD_5$ in effluent, and to exchange some of Metro's effluent with irrigation diversions during low flow conditions in the S. Platte.

11. If figures for items 2 through 7 above are not available, please provide estimate of when they will become available through monitoring and other activities:

Are items 3, 5, and 6 above derived from detailed discharger inventories? (Estimates from rough materials balance and flow calculations are acceptable.)

Yes

12. Key pollutants, if any, for which a weight or other quantity measure is not appropriate:

Figure 10 - Continued

Name of Basin SOUTH PLATTE RIVER

STORET Minor Basin ID No. 0910
Region VIII
State(s) Colorado-Wyoming

1. Area covered: (Reach #1)

HEADWATERS DOWNSTREAM TO BOWLES AVENUE

2. Water quality objectives:

| | (a) Current criteria | (b) EPA Objective: Minimum Acceptable Ambient Level | (c) Actual Level at Worst Time of Yr. | Accuracy (% ±) |
|---|---|---|---|---|
| | mg/l | mg/l | mg/l | ± % |
| Measure #1 | D.O. 6 | 6 | 2.0 | 0.209 |
| Measure #2 | Fecal 1000/100 ml. | 100/100 ml | 740/100 ml | 227 |
| etc. | Coliform | | | |

3. Estimated pollution load--all sources (average FY 72):

| | Load | Accuracy (% ±) |
|---|---|---|
| | pounds/day | ± % |
| Pollutant #1 | | |
| Pollutant #2 $BOD_5$ | 1000 | 10% |
| etc. Fecal Coliform | 740/100 ml. in stream | |

4. Estimated pollution load reduction required to meet EPA water quality objectives derived from 2(c) - 2(b):

| | Required Reduction | Accuracy (% ±) |
|---|---|---|
| | pounds/day | ± % |
| Pollutant #1 | | |
| Pollutant #2 $BOD_5$ | 1000 | 10% |
| etc. Fecal Coliform | 640/100 ml in stream | |

5. Reduction firmly committed by FY 72 and prior year actions:

| | | Year of Actual Reduction | | | |
|---|---|---|---|---|---|
| | | FY 73 | FY 74 | FY 75 | FY 76 |
| | | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #1 | | 0 | ( | 0 | 0 |
| Pollutant #2 | $BOD_5$ | 0 | 0 | 0 | 0 |
| etc. | Fecal Colif. | | | | |

6. Additional reductions to be obtained by FY 73 and FY 74 commitments:

| | | Year of Actual Reduction | | | |
|---|---|---|---|---|---|
| | | FY 73 | FY 74 | FY 75 | FY 76 |
| | | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #1 | | 0 | 0 | 300 | 800 |
| Pollutant #2 | $BOD_5$ | 0 | 640/100 ml. | | |
| etc. | Fecal Colif. | | | | |

Figure 10. Priority Basin Work Sheet

7. Increases in pollution discharges expected:

| | | Year of Actual Increase | | | |
|---|---|---|---|---|---|
| | | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 | $BOD_5$ | 100 | 150 | 200 | 250 |
| etc. | Fecal Colif. | 0 | 0 | 0 | 0 |

8. Total reductions to be obtained--sum of 5 and 6 above:

| | | Year of Actual Reduction | | | |
|---|---|---|---|---|---|
| | | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 | $BOD_5$ | 0 | 0 | 300 | 800 |
| etc. | Fecal Colif. | | 640/100 ml. | | |

9. Total reductions required--sum of 4 and 7 above:

| | | Year of Actual Reduction | | | |
|---|---|---|---|---|---|
| | | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 | $BOD_5$ | 1100 | 1150 | 1200 | 1250 |
| etc. | Fecal Colif. | | 640/100 ml. | | |

10. Year in which minimum acceptable water quality levels are to be achieved--compare 8 and 9 above:
Goal is to have zero discharge to S. Platte. This goal cannot be attained before 1976.

11. If figures for items 2 through 7 above are not available, please provide estimate of when they will become available through monitoring and other activities:

Are items 3, 5, and 6 above derived from detailed discharger inventories? (Estimates from rough materials balance and flow calculations are acceptable.) Yes.

12. Key pollutants, if any, for which a weight or other quantity measure is not appropriate:

Figure 10 - Continued

Name of Basin SOUTH PLATTE RIVER

STORET Minor Basin ID No. 0910
Region VIII
State(s) Colorado

1. Area covered:

(Reach #5)

HENDERSON, COLO. TO THE COLORADO-NEBRASKA STATE LINE

2. Water quality objectives:

| | (a) Current criteria | (b) EPA Objective: Minimum Acceptable Ambient Level | (c) Actual Level at Worst Time of Yr. | Standard Error |
|---|---|---|---|---|
| Measure #1 | mg/l | mg/l | mg/l | % |
| Measure #2 DO | 3.0 | 5.0 | 2.6 | 0.557 |
| etc. Fecal Col. | - | 1000/100 | 5,420,000/100 ml | 16,982 |

3. Estimated pollution load--all sources (average FY 72):

| | Load | Accuracy (% ±) |
|---|---|---|
| Pollutant #1 | pounds/day | ± % |
| Pollutant #2 $BOD_5$ | 73,800 | 20% |
| etc. Fecal Colif. | 5,420,000/100 ml in stream | |

4. Estimated pollution load reduction required to meet EPA water quality objectives derived from 2(c) - 2(b):

| | Required Reduction | Accuracy (% ±) |
|---|---|---|
| Pollutant #1 | pounds/day | ± % |
| Pollutant #2 $BOD_5$ | Not Available | |
| etc. Fecal Colif. | $5.4 \times 10^6$ | |

5. Reduction firmly committed by FY 72 and prior year actions:

| | Year of Actual Reduction | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 $BOD_5$ | 18,500 | 19,300 | 19,700 | 20,200 |
| etc. Fecal Colif. | $5 \times 10^6$ | -- | -- | -- |

6. Additional reductions to be obtained by FY 73 and FY 74 commitments:

| | Year of Actual Reduction | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 $BOD_5$ | 19,000 | 19,300 | 19,700 | 20,200 |
| etc. Fecal Coliform | | | | 41,000/100 ml |

Figure 10. Priority Basin Work Sheet

7. Increases in pollution discharges expected:

| | Year of Actual Increase | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 $BOD_5$ | 5,600 | 11,000 | 18,000 | 26,500 |
| etc. Fecal Colif. | 0 | 0 | 0 | 0 |

8. Total reductions to be obtained--sum of 5 and 6 above:

| | Year of Actual Reduction | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 $BOD_5$ | | Not Available | | |
| etc. | | | | |

9. Total reductions required--sum of 4 and 7 above:

| | Year of Actual Reduction | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 $BOD_5$ | | Not Available | | |
| etc. | | | | |

10. Year in which minimum acceptable water quality levels are to be achieved--compare 8 and 9 above:

1976

11. If figures for items 2 through 7 above are not available, please provide estimate of when they will become available through monitoring and other activities: A model of the S. Platte will be developed by FY 74 and the load reductions necessary to achieve water quality standards will be available then.

Are items 3, 5, and 6 above derived from detailed discharger inventories? (Estimates from rough materials balance and flow calculations are acceptable.) Yes.

12. Key pollutants, if any, for which a weight or other quantity measure is not appropriate:

Figure 10 - Continued

Name of Basin SOUTH PLATTE RIVER

STORET Minor Basin ID No. 0910
Region VIII
State(s) Colorado

1. Area covered:

Reach #1

Cache La Poudre River at Greeley Water Supply Diversion to South Platte River.

2. Water quality objectives:

| | (a) Current criteria | (b) EPA Objective: Minimum Acceptable Ambient Level | (c) Actual Level at Worst Time of Yr. | Accuracy (% ±) |
|---|---|---|---|---|
| Measure #1 | mg/l | mg/l | mg/l | ± % |
| Measure #2 DO | 5/3* | 5 mg/l | 2.8 | 0.386 |
| etc. Fecal Col. | 1000/100 ml/No Std. | 1000/100 ml | 490,000/100 ml | 32,200 |
| Temp. | 90°F | 90°F | 76°F | 2.79 |

*See Narrative.

3. Estimated pollution load--all sources (average FY 72):

| | Load | Accuracy (% ±) |
|---|---|---|
| Pollutant #1 | pounds/day | ± % |
| Pollutant #2 $BOD_5$ | 41,000 | 10% |
| etc. Fecal Col. | $4.9 \times 10^5$/100 ml in stream | |

4. Estimated pollution load reduction required to meet EPA water quality objectives derived from 2(c) - 2(b):

| | Required Reduction | Accuracy (% ±) |
|---|---|---|
| Pollutant #1 | pounds/day | ± % |
| Pollutant #2 $BOD_5$ | 36,000 | 20 |
| etc. Fecal Colif. | $4.89 \times 10^5$/100 ml | |

5. Reduction firmly committed by FY 72 and prior year actions:

| | Year of Actual Reduction | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 $BOD_5$ | 14,400 | 38,000 | 40,000 | 43,000 |
| etc. Fecal Col. | $2 \times 10^5$ | $4 \times 10^5$ | $4 \times 10^5$ | $4 \times 10^5$/100 ml. |

6. Additional reductions to be obtained by FY 73 and FY 74 commitments:

| | Year of Actual Reduction | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 $BOD_5$ | 500 | 2,000 | 6,000 | 8,000 |
| etc. Fecal Col. | | | $2 \times 10^3$ | $4.89 \times 10^5$/100 ml |

Figure 10. Priority Basin Work Sheet

7. Increases in pollution discharges expected:

| | Year of Actual Increase | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 $BOD_5$ | 4,000 | 8,000 | 12,000 | 20,000 |
| etc. Fecal Colif. | 0 | 0 | 0 | 0 |

8. Total reductions to be obtained--sum of 5 and 6 above:

| | Year of Actual Reduction | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 $BOD_5$ | 15,000 | 40,000 | 46,000 | 55,000 |
| etc. Fecal Colif. | $2 \times 10^5$/ 100 ml. | $4 \times 10^5$/ 100 ml | $4.2 \times 10^5$ | $4.89 \times 10^5$/ 100 ml. |

9. Total reductions required--sum of 4 and 7 above:

| | Year of Actual Reduction | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 $BOD_5$ | 40,000 | 44,000 | 48,000 | 56,000 |
| etc. Fecal Colif. | $4.89 \times 10^5$/100 ml---------- | | | |

10. Year in which minimum acceptable water quality levels are to be achieved--compare 8 and 9 above:

1976

11. If figures for items 2 through 7 above are not available, please provide estimate of when they will become available through monitoring and other activities:

Are items 3, 5, and 6 above derived from detailed discharger inventories? (Estimates from rough materials balance and flow calculations are acceptable.)

Yes

12. Key pollutants, if any, for which a weight or other quantity measure is not appropriate:

Figure 10 - Continued

Name of Basin SOUTH PLATTE RIVER

STORET Minor Basin ID No. 0910
Region VIII
State(s) Colorado

1. Area covered:

(Reach #2)

Cache La Poudre River Headwaters to Greeley Water Supply Diversion (Ted's Place)

2. Water quality objectives:

| | (a) Current criteria | (b) EPA Objective: Minimum Acceptable Ambient Level | (c) Actual Level at Worst Time of Yr. | Accuracy (% ±) |
|---|---|---|---|---|
| | | No Discharge | | |
| Measure #1 | mg/l | mg/l | mg/l | ± % |
| Measure #2 DO | 6 | 6 | No W.Q. data | None |
| etc. Fecal Col. | 1000/100 ml | 1000/100 ml | | |
| Temp. | 70°F | 70°F | | |

3. Estimated pollution load--all sources (average FY 72):

| | Load | Accuracy (% ±) |
|---|---|---|
| Pollutant #1 | pounds/day | ± % |
| Pollutant #2 $BOD_5$ | 200 | 20% |
| etc. Fecal Colif. | 0 | |

4. Estimated pollution load reduction required to meet EPA water quality objectives derived from 2(c) - 2(b):

| | Required Reduction | Accuracy (% ±) |
|---|---|---|
| Pollutant #1 | pounds/day | ± % |
| Pollutant #2 $BOD_5$ | 200 | 20% |
| etc. Fecal Colif. | Not Available | |

5. Reduction firmly committed by FY 72 and prior year actions:

| | Year of Actual Reduction | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 $BOD_5$ etc. | Not Available | | | |

6. Additional reductions to be obtained by FY 73 and FY 74 commitments:

| | Year of Actual Reduction | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 $BOD_5$ | | | | |
| etc. Fecal Col. | | 200 | | |

Figure 10. Priority Basin Work Sheet

7. Increases in pollution discharges expected:

| | Year of Actual Increase | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 $BOD_5$ | 0 | 0 | 0 | 0 |
| etc. Fecal Colif. | 0 | 0 | 0 | 0 |

8. Total reductions to be obtained--sum of 5 and 6 above:

| | Year of Actual Reduction | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 | | | | |
| etc. | | 200 | 200 | 200 |

9. Total reductions required--sum of 4 and 7 above:

| | Year of Actual Reduction | | | |
|---|---|---|---|---|
| | FY 73 | FY 74 | FY 75 | FY 76 |
| Pollutant #1 | lbs/day | lbs/day | lbs/day | lbs/day |
| Pollutant #2 | | | | |
| etc. | | 200 | 200 | 200 |

10. Year in which minimum acceptable water quality levels are to be achieved--compare 8 and 9 above: Water Quality Standards are assumed to be met at present time. No discharge policy to be implemented by FY 74.

11. If figures for items 2 through 7 above are not available, please provide estimate of when they will become available through monitoring and other activities: Modeling study of S.Platte to be available FY 1973 to determine waste reductions necessary.

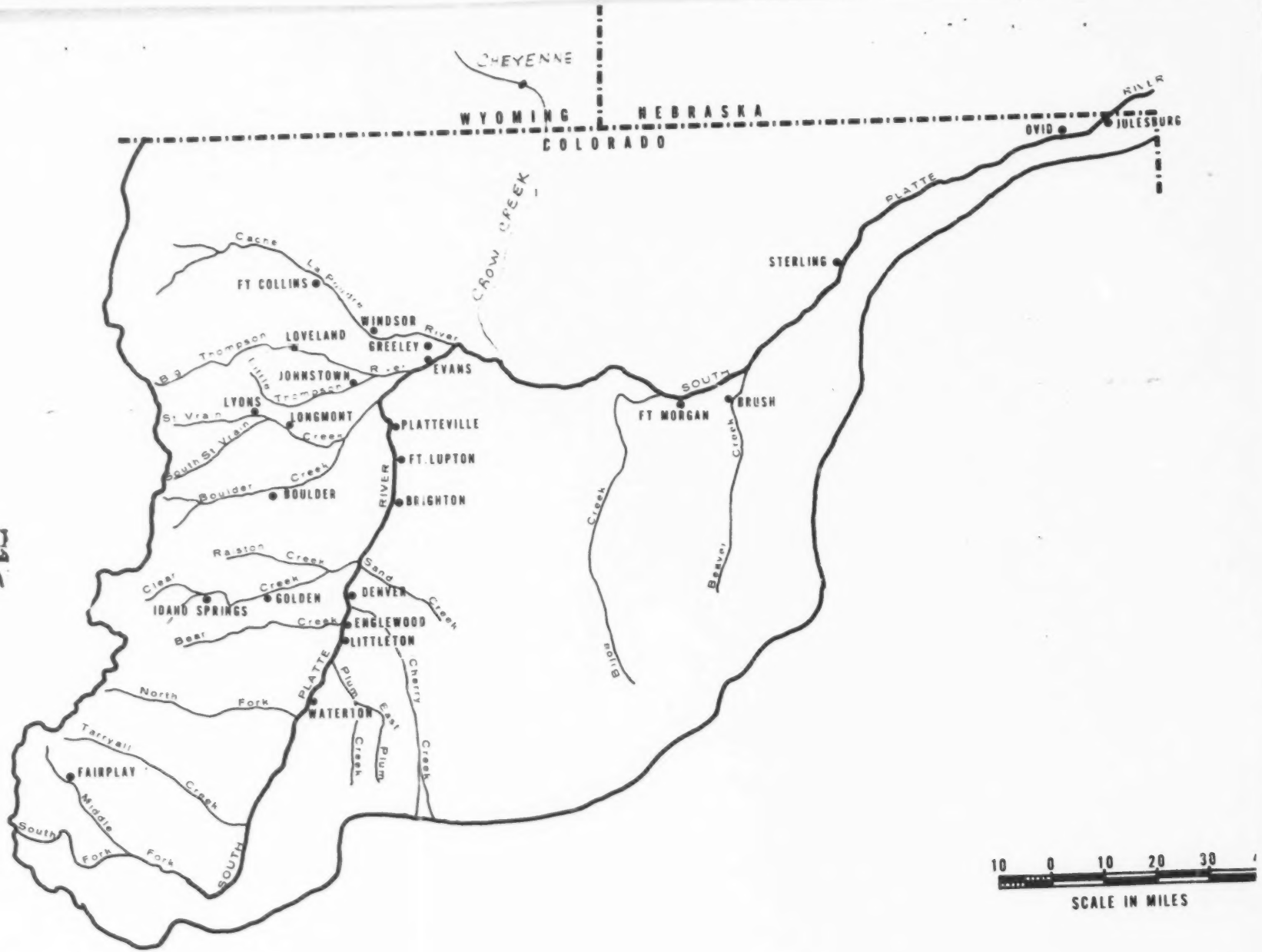
Are items 3, 5, and 6 above derived from detailed discharger inventories? (Estimates from rough materials balance and flow calculations are acceptable.)

YES

12. Key pollutants, if any, for which a weight or other quantity measure is not appropriate:

Figure 10 - Continued

APPENDIX C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WYOMING
NEBRASKA
COLORADO
CROW CREEK
RIVER
OVID
JULESBURG
PLATTE
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SOUTH
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BRUSH
Beaver Creek
Big Creek
Cache La Poudre
FT COLLINS
WINDSOR
LOVELAND
GREELEY
EVANS
Big Thompson
Little Thompson
JOHNSTOWN
LYONS
St Vrain
LONGMONT
South St Vrain
Boulder Creek
BOULDER
PLATTEVILLE
FT LUPTON
BRIGHTON
Raston Creek
Clear Creek
IDAHO SPRINGS
GOLDEN
DENVER
Sand Creek
Bear Creek
ENGLEWOOD
LITTLETON
Cherry Creek
Plum Creek
East Plum Creek
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North Fork
Tarryall Creek
FAIRPLAY
Middle Fork
South Fork
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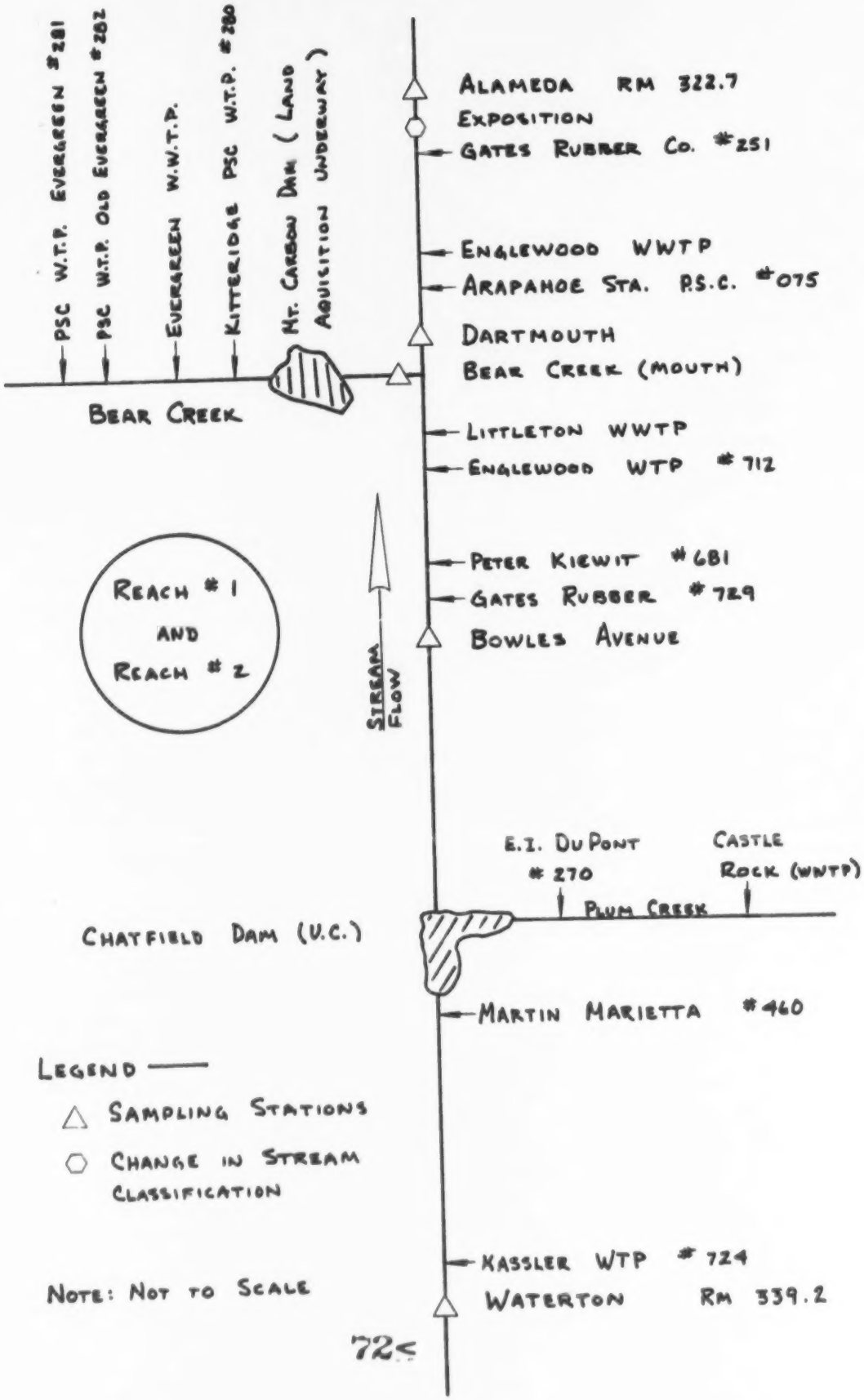
SCALE IN MILES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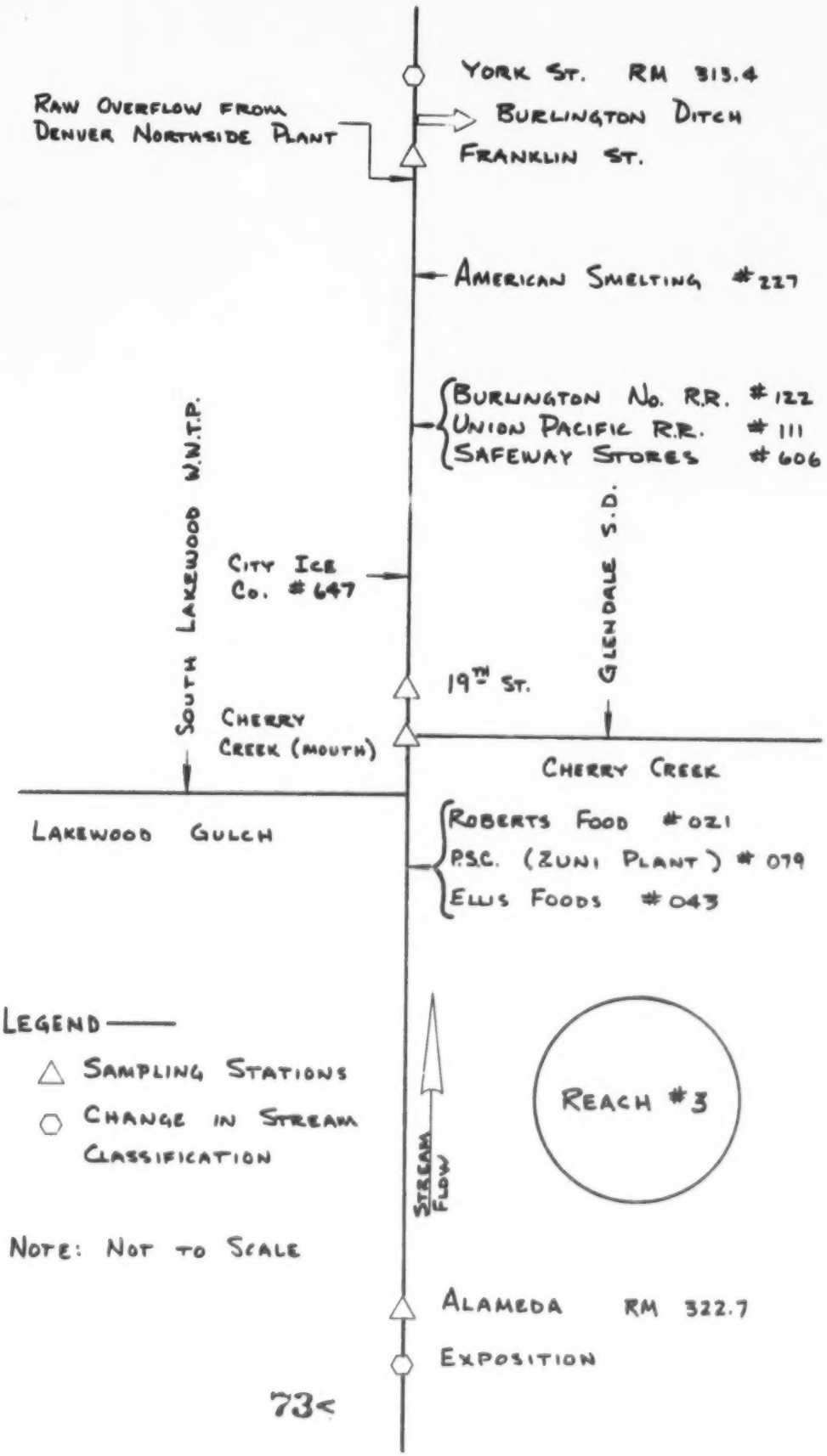
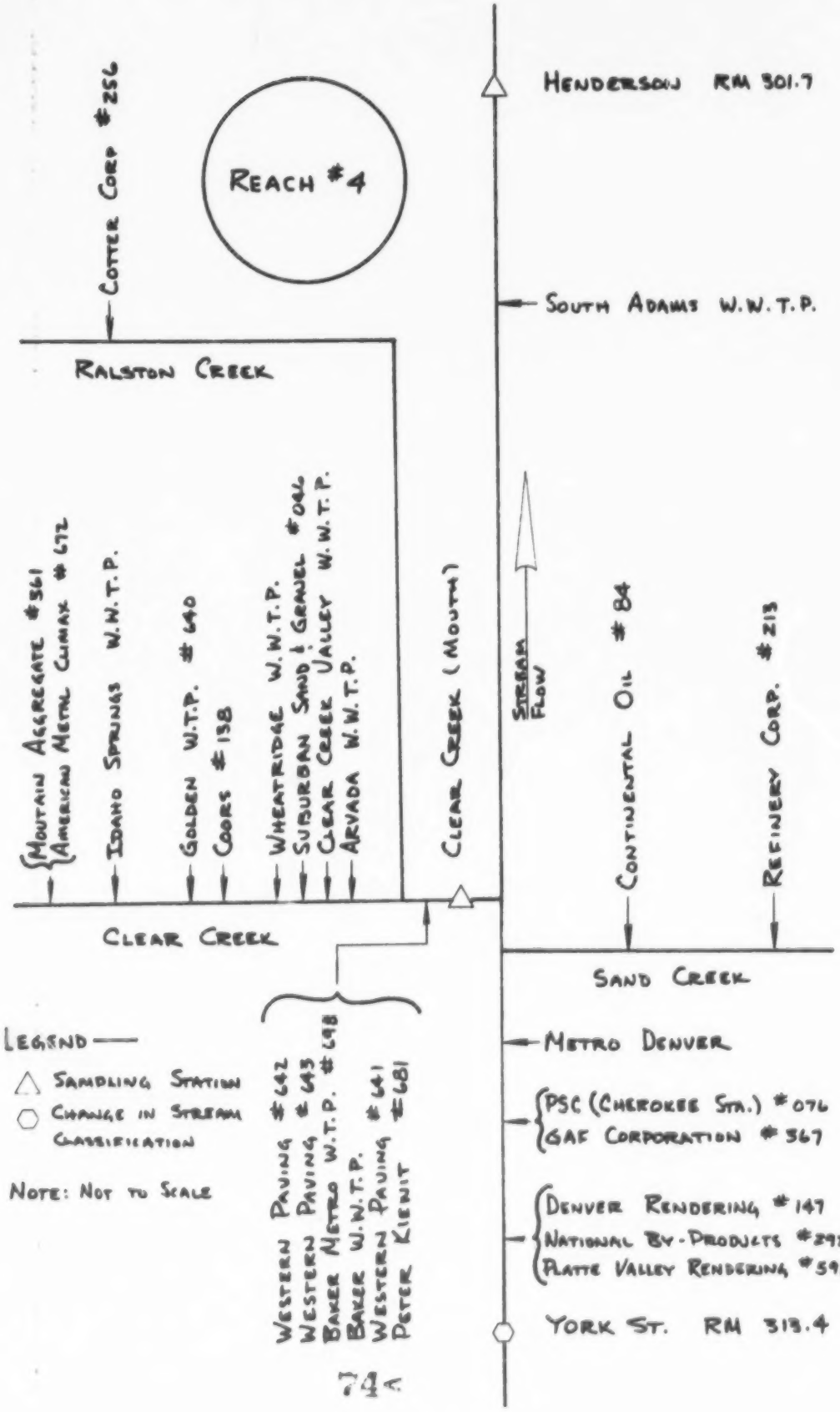
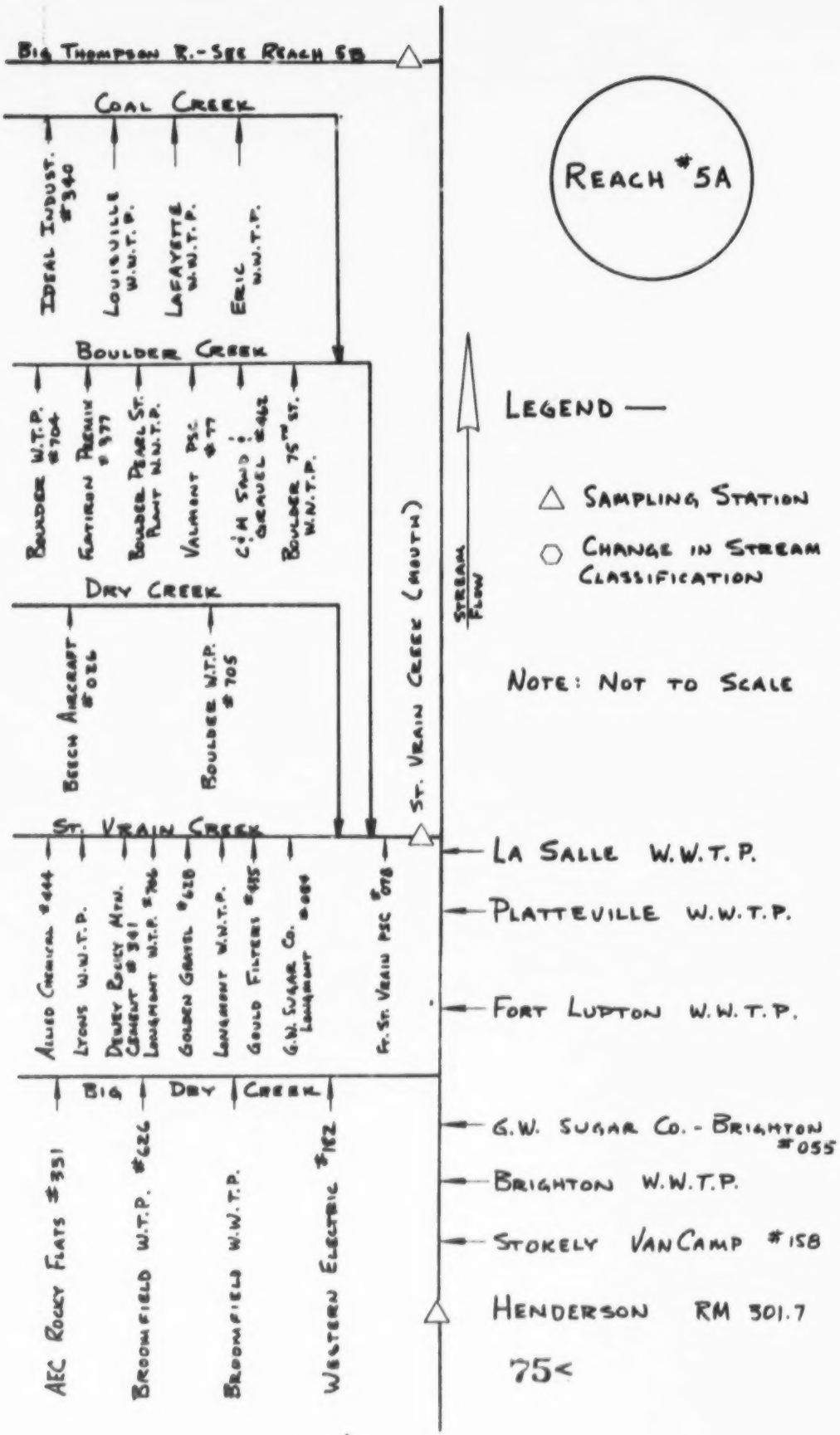
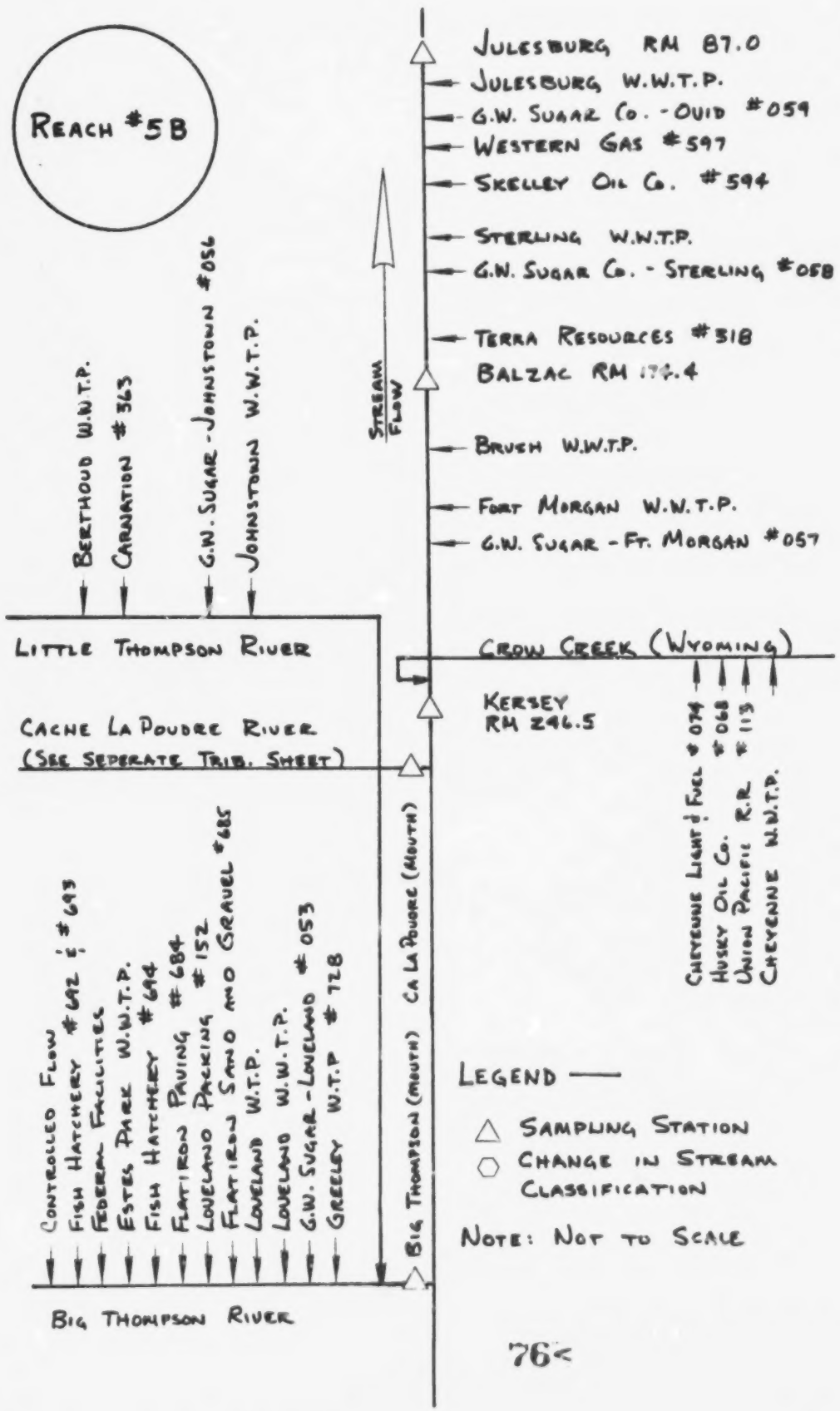
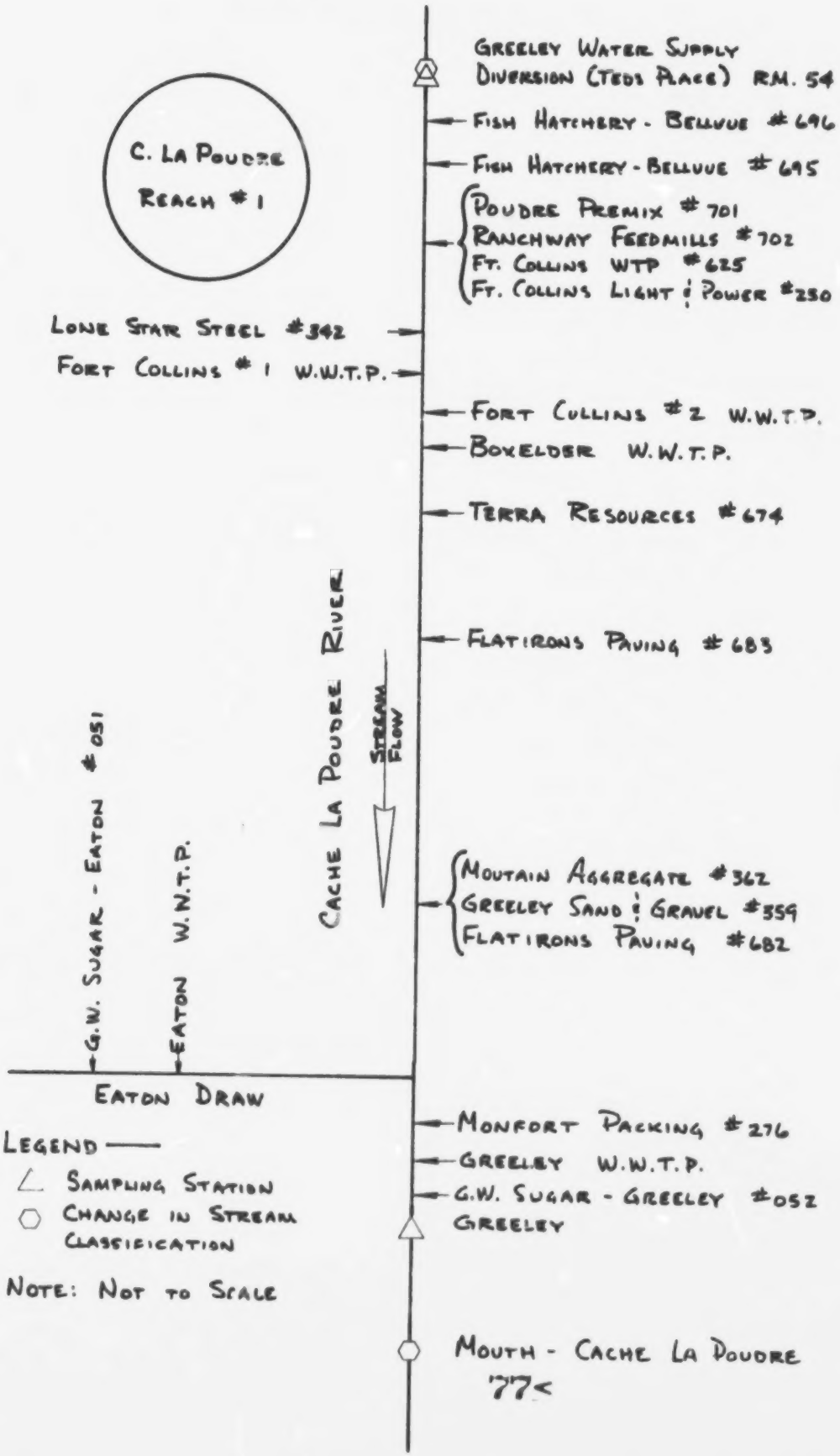
PSC W.T.P. OLD EVERGREEN #282
EVERGREEN W.W.T.P.
KITTERIDGE PSC W.T.P. #280
MT. CARBON DAM (LAND AQUISITION UNDERWAY)
BEAR CREEK
ALAMEDA RM 322.7
EXPOSITION
GATES RUBBER CO. #251
ENGLEWOOD WWTP
ARAPAHOE STA. P.S.C. #075
DARTMOUTH
BEAR CREEK (MOUTH)
LITTLETON WWTP
ENGLEWOOD WTP #712
REACH #1
AND
REACH #2
PETER KIEWIT #681
GATES RUBBER #729
BOWLES AVENUE
STREAM FLOW
E.I. DU PONT #270
CASTLE ROCK (WWTP)
PLUM CREEK
CHATFIELD DAM (U.C.)
MARTIN MARIETTA #460
LEGEND
SAMPLING STATIONS
CHANGE IN STREAM CLASSIFICATION
NOTE: NOT TO SCALE
KASSLER WTP #724
WATERTON RM 339.2


YORK ST. RM 313.4
RAW OVERFLOW FROM DENVER NORTHSIDE PLANT
BURLINGTON DITCH
FRANKLIN ST.
AMERICAN SMELTING #227
BURLINGTON No. R.R. #122
UNION PACIFIC R.R. #111
SAFEWAY STORES #606
SOUTH LAKEWOOD W.N.T.P.
GLENDALE S.D.
CITY ICE Co. #647
19TH ST.
CHERRY CREEK (MOUTH)
CHERRY CREEK
LAKEWOOD GULCH
ROBERTS FOOD #021
P.S.C. (ZUNI PLANT) #079
ELLIS FOODS #043
LEGEND
SAMPLING STATIONS
CHANGE IN STREAM CLASSIFICATION
STREAM FLOW
REACH #3
NOTE: NOT TO SCALE
ALAMEDA RM 322.7
EXPOSITION

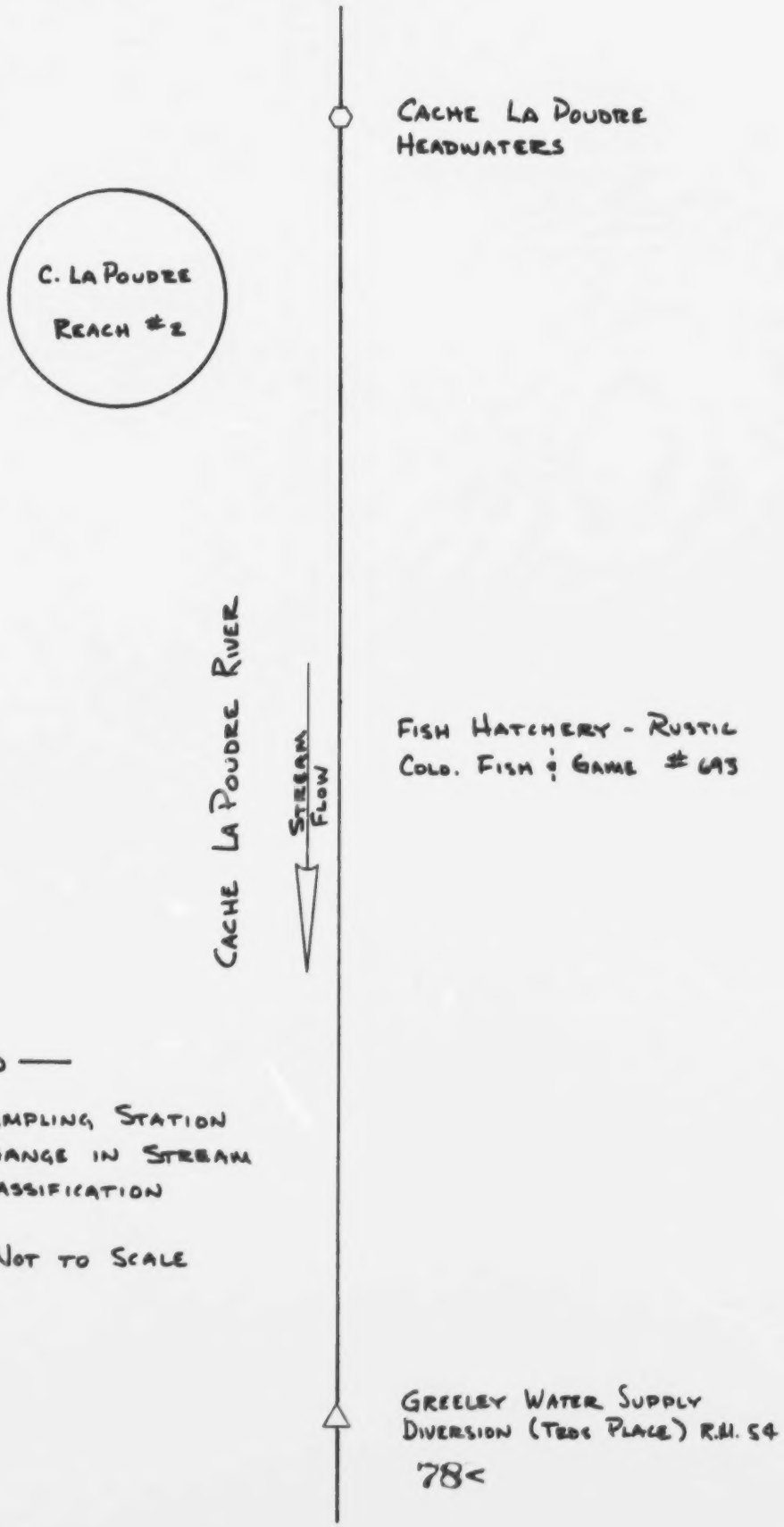

HENDERSON RM 301.7
REACH #4
COTTER CORP #256
SOUTH ADAMS W.W.T.P.
RALSTON CREEK
MOUTAIN AGGREGATE #361
AMERICAN METAL CLIMAX #672
IDAHO SPRINGS W.W.T.P.
GOLDEN W.T.P. #640
COORS #138
WHEATRIDGE W.W.T.P.
SUBURBAN SAND & GRAVEL #046
CLEAR CREEK VALLEY W.W.T.P.
ARVADA W.W.T.P.
CLEAR CREEK (MOUTH)
STREAM FLOW
CONTINENTAL OIL #84
REFINERY CORP. #213
CLEAR CREEK
SAND CREEK
METRO DENVER
PSC (CHEROKEE STA.) #076
GAF CORPORATION #367
DENVER RENDERING #147
NATIONAL BY-PRODUCTS #292
PLATTE VALLEY RENDERING #595
YORK ST. RM 313.4
WESTERN PAVING #642
WESTERN PAVING #643
BAKER METRO W.T.P. #698
BAKER W.W.T.P. #641
WESTERN PAVING #681
PETER KIEWIT
LEGEND
SAMPLING STATION
CHANGE IN STREAM CLASSIFICATION
NOTE: NOT TO SCALE


BIG THOMPSON R. - SEE REACH 5B
COAL CREEK
IDEAL INDUST. #340
LOUISVILLE W.W.T.P.
LAFAYETTE W.W.T.P.
ERIC W.W.T.P.
BOULDER CREEK
BOULDER W.T.P. #704
KAISER PERLITE #377
BOULDER PEARL ST. PLANT W.W.T.P.
VALMONT PSC #77
C&H SAND & GRAVEL #462
BOULDER 75TH ST. W.W.T.P.
DRY CREEK
BEECH AIRCRAFT #036
BOULDER W.T.P. #705
ST. VRAIN CREEK
ALLIED CHEMICAL #444
LYONS W.W.T.P.
DEWEY BOULY MFG. CEMENT #341
LONGMONT W.T.P. #706
GOLDEN GRAVEL #628
LONGMONT W.W.T.P.
GOULD FILTERS #435
G.W. SUGAR CO. LONGMONT #089
FT. ST. VRAIN PSC #078
BIG DRY CREEK
AEC ROCKY FLATS #351
BROOMFIELD W.T.P. #626
BROOMFIELD W.W.T.P.
WESTERN ELECTRIC #182
ST. VRAIN CREEK (MOUTH)
STREAM FLOW
REACH #5A
LEGEND —
SAMPLING STATION
CHANGE IN STREAM CLASSIFICATION
NOTE: NOT TO SCALE
LA SALLE W.W.T.P.
PLATTEVILLE W.W.T.P.
FORT LUPTON W.W.T.P.
G.W. SUGAR CO. - BRIGHTON #055
BRIGHTON W.W.T.P.
STOKELY VANCAMP #158
HENDERSON RM 301.7


REACH #5B
JULESBURG RM 87.0
JULESBURG W.W.T.P.
G.W. SUGAR CO. - OUID #059
WESTERN GAS #597
SKELLEY OIL CO. #594
STERLING W.W.T.P.
G.W. SUGAR CO. - STERLING #058
TERRA RESOURCES #518
BALZAC RM 174.4
STREAM FLOW
BRUSH W.W.T.P.
FORT MORGAN W.W.T.P.
G.W. SUGAR - FT. MORGAN #057
BERTHOUD W.W.T.P.
CARNATION #363
G.W. SUGAR - JOHNSTOWN #056
JOHNSTOWN W.W.T.P.
LITTLE THOMPSON RIVER
CROW CREEK (WYOMING)
KERSEY RM 246.5
CACHE LA POUDRE RIVER
(SEE SEPERATE TRIB. SHEET)
CHEYENNE LIGHT & FUEL #074
HUSKY OIL CO. #068
UNION PACIFIC R.R. #113
CHEYENNE W.W.T.P.
CONTROLLED FLOW
FISH HATCHERY #692 & #693
FEDERAL FACILITIES
ESTES PARK W.W.T.P.
FISH HATCHERY #694
FLATIRON PAVING #684
LOVELAND PACKING #152
FLATIRON SAND AND GRAVEL #685
LOVELAND W.W.T.P.
LOVELAND W.W.T.P.
G.W. SUGAR - LOVELAND #053
GREELEY W.T.P #728
BIG THOMPSON (MOUTH)
CA LA POUDRE (MOUTH)
BIG THOMPSON RIVER
LEGEND
SAMPLING STATION
CHANGE IN STREAM CLASSIFICATION
NOTE: NOT TO SCALE


C. LA POUDRE
REACH #1
GREELEY WATER SUPPLY
DIVERSION (TEDS PLACE) RM. 54
FISH HATCHERY - BELLVUE #696
FISH HATCHERY - BELLVUE #695
POUDRE PREMIX #701
RANCHWAY FEEDMILLS #702
FT. COLLINS WTP #625
FT. COLLINS LIGHT & POWER #230
LONE STAR STEEL #342
FORT COLLINS #1 W.W.T.P.
FORT CULLINS #2 W.W.T.P.
BOXELDER W.W.T.P.
TERRA RESOURCES #674
FLATIRONS PAVING #683
CACHE LA POUDRE RIVER
STREAM FLOW
MOUTAIN AGGREGATE #362
GREELEY SAND & GRAVEL #359
FLATIRONS PAVING #682
G.W. SUGAR - EATON #051
EATON W.W.T.P.
EATON DRAW
MONFORT PACKING #276
GREELEY W.W.T.P.
G.W. SUGAR - GREELEY #052
GREELEY
MOUTH - CACHE LA POUDRE
LEGEND
SAMPLING STATION
CHANGE IN STREAM CLASSIFICATION
NOTE: NOT TO SCALE

77<


CACHE LA POUDRE
HEADWATERS
C. LA POUDRE
REACH #2
CACHE LA POUDRE RIVER
STREAM FLOW
FISH HATCHERY - RUSTIC
COLD. FISH & GAME #693
LEGEND
SAMPLING STATION
CHANGE IN STREAM CLASSIFICATION
NOTE: NOT TO SCALE
GREELEY WATER SUPPLY
DIVERSION (TEDS PLACE) R.M. 54
78<

APPENDIX D

PRIORITY RANKING OF DISCHARGES IN SOUTH PLATTE BASIN
Top Ten Grouping: Not in order of priority within group

(1) Denver Metro #1

South Lakewood WWTP
Wheatridge WWTP
Clear Creek S.D. WWTP
Arvada S.D.
Baker W & S.D.

Greeley WWTP
Great Western (Greeley) #052
Great Western (Ovid) #059

(2) Coors #138 (includes Golden's waste)
Great Western (Longmont) #054
Sterling WWTP RM 199.1

(3) Gates Rubber Co. #251 RM 320
Continental Oil #084 Sand Ck.

(4) Husky Oil Co. #068 - Crow Ck.
Fort Morgan WWTP RM 195.2
Great Western (Sterling) #058

(5) Allied Chemical #444 - St. Vrain

(6) Brighton WWTP RM 295.8

(7) Littleton WWTP
Englewood WWTP
American Smelting #227 RM 315
American Metal Climax #672
Clear Creek
Cotter Corp #256 - Ralston Ck.
Great Western (Ft. Morgan) #057

(8) Beech Aircraft #026 - Dry Creek
Brush WWTP RM 185.6
Julesburg WWTP RM 89.6

(9) Martin Marrietta #460
PSC Cherokee Sta. #076 RM 313
Boulder WWTP - 75th St. Plant
Great Western (Loveland) #053
Berthoud WWTP - Little Thompson
Fort Collins WWTP - Cache La Poudr.

Plant #1
Plant #2
Boxelder

Great Western - Eaton #051
Eaton WWTP

(10) Gates Rubber Co. #729 RM 330
Union Pacific R.R. #111 RM 316
GAF Corp. #367 RM 313
Refinery Corp. #213 RM 312.1
Western Paving #642 Ralston Ck.
Western Paving #643 Ralston Ck.
Western Paving #641 Ralston Ck.
AEC (Rocky Flats) #331
Terra Resources #674 - La Poudre

APPENDIX E

## CRITERIA FOR PRIORITY ASSESSMENT

| PRIORITY VALUE | % of Total Basin Discharge | BOD | TDS | TSS |
|---|---|---|---|---|
| 0.5 | No information available from any source. | | | |
| 1 | 1% | ≤ 1670 | ≤ 15,900 | ≤ 2,500 |
| 3 | 5% | ≤ 8300 | ≤ 80,000 | ≤ 12,400 |
| 5 | > 5% | > 8300 | > 80,000 | > 12,400 |

| PRIORITY VALUE | FECAL COLIF. | GREASE & OIL Pounds | TOXIC METALS |
|---|---|---|---|
| 0 | < 5000/100 ml | | |
| 0.5 | | | If suspected & no data available. |
| 1 | > 5000/100 ml | < 1 | |
| 3 | < 10,000/100 ml | < 68 | |
| 5 | > 10,000/100 ml | > 68 | If found & is health hazard |

## APPENDIX F

INFORMATION SOURCES USED IN OBTAINING BASIN WASTE DISCHARGES AND WATER QUALITY DATA FOR SOUTH PLATTE BASIN.

1) RAPP Permit Applications.

2) Colorado State Water Pollution Control Division Wastewater Treatment Plant Effluent Sampling Data.

3) STORET Water Quality Data, including data from

   a. Denver Health Dept.
   b. State of Colorado
   c. USGS-EPA
   d. Municipal Inventory

4) Draft DFIC Report, "Water Quality Investigation in the South Platte River Basin, Colorado, 1971-1972" including 3 previous publications:

   1. Investigations of the Effects of the Waste Discharges from the Great Western Sugar Mill at Ovid, Colorado, on Water Quality Conditions of the Soutn Platte River

   2. Effects of Waste Discharges on Water Quality of the Cache La Poudre and South Platte Rivers - Greeley Area

   3. Effects of Waste Discharges on Water Quality of South Platte River - Denver Metropolitan area.

   Also the 1972 Draft DFIC Reports:

   1) Waste Discharge Limitations for the Cache La Poudre

   2) Waste Discharge Limitations for the St. Vrain Creek Basin.

5) Lower South Platte River Interim Plan (for Colorado).

6) Interim Plan for Water Quality Management in the Denver Metropolitan Area, by DRCOG.

7) USGS - Compilation of Records of Surface Waters of the United States, October 1969 to September 1970, Part (1) Colorado.

# TABLE I



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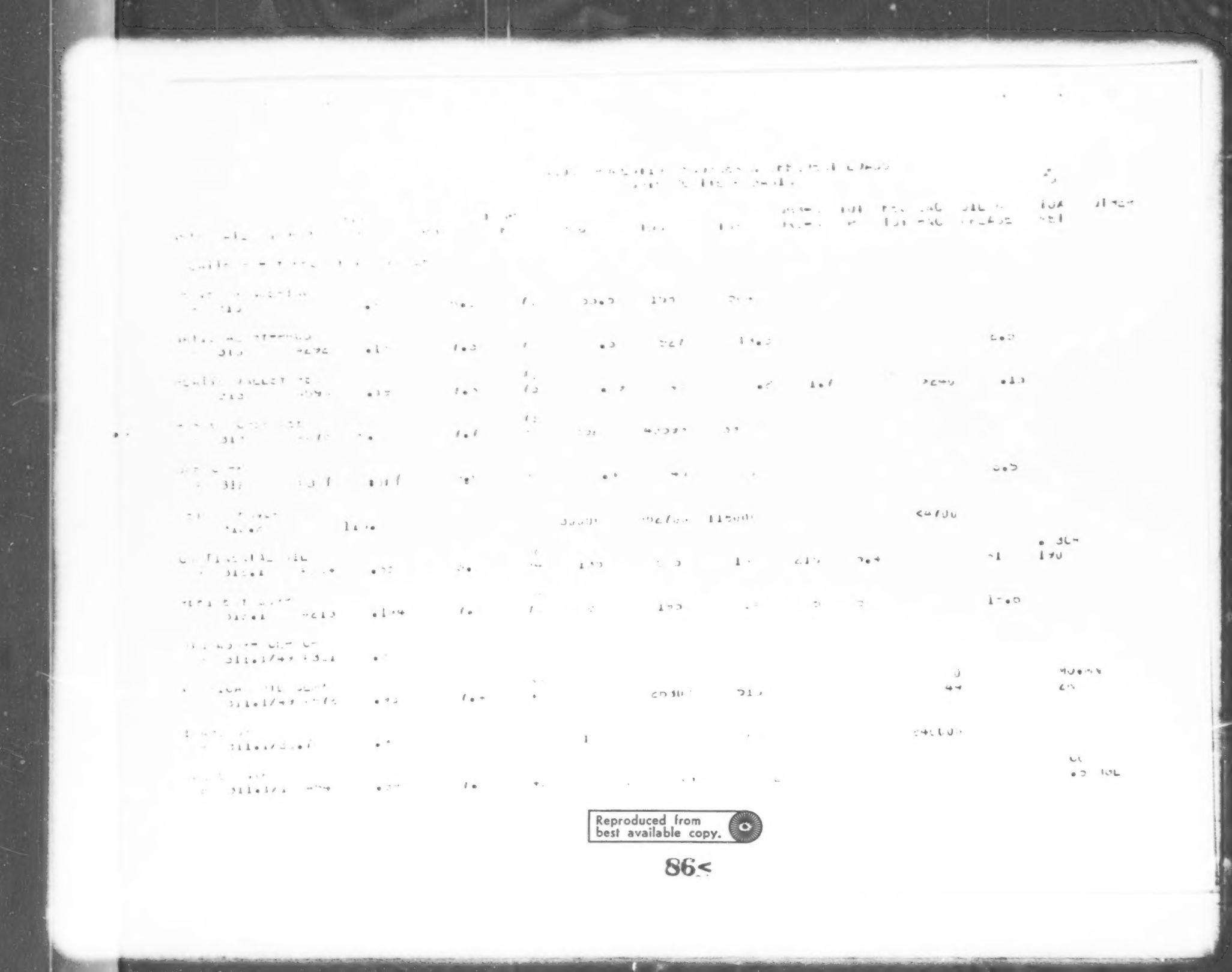

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| WASTE WATER SOURCE | FLOW | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SPLATTE R - HENDERSON TO PLATTE CITY | | | | | | | | | | | | | |
| FOULDER-7 ST PL<br>RM 270/17.5/17.0 | 1.4 | | | | | | | | | | | | |
| IDEAL IND -340<br>RM 270/17.0/17.7/17 | .004 | 1.0 | 04 | | | | | | | | | | |
| LOUISVILLE SD<br>RM 270/17.0/17.7/7 | .6 | | | | | | | | | | | | |
| LAFAYETTE SD<br>RM 270/17.0/17.7/3 | .1 | | | | | | | | | | | | |
| ERIE SD<br>RM 270/17.0/17.7/1 | .1 | | | | | | | | | | | | |
| PS CO-ST VR<br>RM 270/1 MOVE | 3.6 | 1.0 | 7 | | | | | | | | | | |
| US HWY MTN NTL PK<br>RM 260/60 PK 1 - | .004 | 1.0 | 04 | | | | | | | | | | |
| US HWY MTN NTL PK<br>RM 260/10 MN V S | .006 | 1.0 | 04 | | | | | | | | | | |
| US HWY MTN NTL PK<br>RM 260/60/3 PL - | .004 | 1.0 | | | | | | | | | | | |
| US FITZSIMONS HOSP<br>RM 311.1/5 | .02 | | | | | | | | | | | | |
| US HWY MTN LKS<br>RM 310/4 | .2 | 1.0 | | | | | | | | | | | |
| US BUCKLEY AFB<br>RM 311.1/7 | .0 | | | | | | | | | | | | |
| COLO FWY-CO TO SPRGS<br>RM 250.4/60.5 | 1.0 | 1.0 | 01 | | | | | | | | | | |

| WASTE WATER SOURCE | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SPLATTE R - RENDERSON TO STATE LINE | | | | | | | | | | | | | | |
| ESTES PK SD<br>RM 200.4/54.3 | .0 | | | <1 | <1 | 1 | | <2 | | <1 | <1 | | | |
| COLO F&G-DRAKE PSH<br>RM 200/4C | 3.4 | 7.3 | <1 | 3.0 | 130 | <1 | <1 | <3<br><2 | | <1 | <1 | | | |
| FLATIRON PKG<br>HDM4 | 3.1 | 7.3-7.5 | <1 | <1 | 430 | | | <1 | | <1 | <1 | | | |
| LOVELAND PKG<br>MISC | .07 | 7.3 | 2<br><1 | <1 | 270 | | | <1 | <1 | | 1.0 | | | |
| FLATIRON SAND & GR<br>MDSD | 6.3 | 7.3-7.6 | <1 | <1 | 1 300 | | | <1 | <1 | | | | | |
| LOVELAND WTP MC/S<br>RM 200/ | .13 | 7.3 | <1 | <1 | <1 | <1 | | <1 | <1 | | | | | |
| LOVELAND WATR<br>RM 200/24.3 | 2.1 | | 1300 | 1000 | 11 | | 2.0 | 1600<br>1100 | | <1 | <1 | | .3<br>DES | |
| GW SUGAR-LVLD MDSD<br>RM 200/22.3 | 3.2 | 3.2 | <1 | 2400 | 350 | | | 200<br>1300 | | <1 | <1 | | | |
| GREELEY WTP MC/S<br>RM 200.47 | .12 | 7.3 | 23 | <1 | <1 | <1 | | <1 | <1 | | <1 | <1 | | |
| BERTHOUD<br>RM 200.4/7.3/12 | .2 | 7.1 | <1 | 21 | <1 | 1 | | <2<br>2200000 | | | | | | |
| LAKEWATER MDSD<br>RM 200.4/1.2/4 | .13 | 3.1 | 1<br><1 | <1 | <1 | <1 | | <1 | | <1 | <1 | <1 | | |
| GW SUGAR-DIST MDSD<br>RM 200.4/7.3/7 | 4.3 | 7.3 | <1 | 41 | 4300 | 331 | <1<br>1.3 | 4300<br>1000 | 2.3 | | <1 | <1 | | |
| JOHNSTOWN<br>RM 200.4/7.3/2.3 | .2 | | <1 | <1 | <1 | 1 | | <1 | | | | | | |

| WASTE WATER SOURCE | | |

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WASTE WATER SOURCE

SPLAITE R - MEASURED IN [illegible]

FT BURDAN WATER
RM 193.2

BRUSH WATER
RM 183.5

TERRA RED
RM 109

UK SUGAR-STEW
RM 130.4

STERLING WATER
RM 146.0

SHELLY OIL CO ASSN
RM 136

WESTERN GAS
RM 135

GA SUGAR-WIN
RM 94.3

JULESBURG
RM 57.0

PRINT REPEATS AT UPSTREAM

APPENDIX H

PAGE

TABLE II - AMBIENT WATER QUALITY AT NEAREST DOWNSTREAM MONITORING STATION

SOUTH PLATTE RIVER BASIN
Headwaters Downstream to Bowles Ave.

Reach #1

| | BASIC PARAMETERS - MG/L WHERE APPLICABLE | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WASTEWATER SOURCES & R.M. | FLOW cfs | PH S.U. | TEMP °F | DO mg/l | TDS mg/l | TSS mg/l | $NH_3$-N OR $\overset{\circ}{N}$-N mg/l | TOTAL P ($PO_4$) | (FECAL) (TOTAL) BACT. | GREASE & OIL mg/l | TOXIC METALS mg/l | $BOD_5$ mg/l | STDS. BASE FLOW | |
| CONTROL POINT (headwaters) | | | | | | | | | | | | | | |
| South Platte River at Waterton, Colo. RM 339.2 | 11 | 7.2-8.1 | 58 | 8.6 | 218 | - | 0.25 / -- | 1.1 | 490/4600 | | Zn 550 mg/l<br>Fe 650 mg/l<br>B 120 mg/l | 2.2 | - | |
| South Platte River above Littleton, Colo. RM 330.4 (Bowles Avenue) | 54 | 6.6-8.6 | 69 | 2.0 | 293 | 809 | 0.8 / -- | 3.0 | 740/8000 | 6 | Se 6.0<br>Zn 760<br>Fe 2400<br>Cd 4 | 4.0 | - | |
| | | | | | | | | | | | Mn 700<br>B 130 | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

## TABLE II - AMBIENT WATER QUALITY AT NEAREST DOWNSTREAM MONITORING STATION

Reach #2

SOUTH PLATTE RIVER BASIN

Bowles Avenue to Exposition Avenue

| Wastewater Sources & R.M. | BASIC PARAMETERS - MG/L WHERE APPLICABLE | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FLOW cfs | PH S.U. | TEMP °F | DO mg/l | TDS mg/l | TSS mg/l | $NH_3$-N / $OR\bar{G}$-N mg/l | TOTAL P ($PO_4$) | (FECAL) (TOTAL) BACT. | GREASE & OIL mg/l | TOXIC METALS mg/l | $BOD_5$ | STRG. BASE FLOW | |
| CONTROL POINT (headwaters) | | | | | | | | | | | | | | |
| Bear Creek RM 326.4 | 1.2 | 7.5-8.5 | 69 | 3.8 | 470 | - | 0.8 | 0.8 | 13,000 / 130,000 | -- | Zn 700<br>Se 5<br>Fe 1100<br>B 320 | 3.2 | -- | |
| South Platte River at Dartmouth Ave., Denver RM 325.9 | - | 6.2-8.7 | 67 | 2.4 | - | 933 | | 5.0 | 17,000 / 58,000 | 35 | -- | 13 | -- | |
| South Platte River at Alameda Ave., Denver RM 322.7 | - | 6.3-8.5 | 67 | 2.6 | - | 808 | | 5.6 | 7200 / 66,000 | 32 | -- | 18 | -- | |
| | | | | | | | | | | | | | | |
| Note 1. Alameda Station just downstream from Exposition Division Point.<br>2. Minimum Flow in Section Bowles Ave. to Exposition Ave. is estimated to equal 100 cfs. | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

## TABLE II - AMBIENT WATER QUALITY AT NEAREST DOWNSTREAM MONITORING STATION

Reach #3

SOUTH PLATTE RIVER
Exposition Avenue to York St., (Data at York taken at Franklin St.)

| | BASIC PARAMETERS - MG/L WHERE APPLICABLE | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FLOW cfs | PH S.U. | TEMP °F | DO mg/l | TDS mg/l | TSS mg/l | $NH_3$-N ORG-N mg/l | TOTAL P ($PO_4$) | (FECAL) (TOTAL) BACT. | GREASE & OIL mg/l | TOXIC METALS mg/l | BOD mg/l | STDS. BASE FLOW | |
| Wastewater Sources & R.M. | | | | | | | | | | | | | | |
| CONTROL POINT (headwaters) | | | | | | | | | | | | | | |
| Cherry Creek RM 317.7 | -- | 6.9-9.1 | 72 | 3.0 | -- | 175 | | | 160,000 / 250,000 | 2.6 | | 16 | | |
| S.Platte River at 19th St., Denver RM 317.3 | 112 | 6.8-8.2 | 67 | 2.7 | | 851 | | 10.2 | 25,000 / 300,000 | 13.3 | | 26 | | |
| S. Platte River at Franklin St., Denver RM 314.0 | | 6.8-8.7 | 69 | 2.2 | | 996 | | 3.4 | 120,000 / 200,000 | 18 | | 19 | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

## TABLE II - AMBIENT WATER QUALITY AT NEAREST DOWNSTREAM MONITORING STATION

SOUTH PLATTE RIVER — Reach #4
York Street to Henderson, Colorado

| | BASIC PARAMETERS - MG/L WHERE APPLICABLE | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FLOW | PH | TEMP °F | DO | TDS | TSS | $NH_3$-N ORG-N | TOTAL P | (FECAL) (TOTAL) BACT. | GREASE & OIL | TOXIC METALS | $BOD_5$ mg/l | STDS. BASE FLOW | |
| Wastewater Sources & R.M. | | | | | | | | | | | | | | |
| CONTROL POINT | | | | | | | | | | | | | | |
| Clear Creek RM 311.1 | 14 | 7.2-8.8 | 76 | 5.0 | 692 | - | | | 172,000<br>1,720,000 | | Se 20<br>Zn 300<br>Mn 1000<br>Fe 2400 | 22 | | |
| S. Platte River at Henderson, CO RM 301.7 | 143 | 6.9-8.8 | 77 | 2.4 | 2250 | 1650 | 12.3 | 1.8 | 109,000<br>1,750,000 | | Zn 290<br>Pb 160<br>Cn 80 | 26 | | |
| | | | | | | | | | | | Cr+6 50<br>Cd 20<br>Hg 0.3 | | | |
| | | | | | | | | | | | | | | |
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## TABLE II - AMBIENT WATER QUALITY AT NEAREST DOWNSTREAM MONITORING STATION

SOUTH PLATTE RIVER BASIN
Henderson, Colo. to the Colorado-Nebraska State Line

REACH #5

| WASTEWATER SOURCES & R.M. | BASIC PARAMETERS - MG/L WHERE APPLICABLE | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FLOW cfs | PH S.U. | TEMP °F | DO mg/l | TDS mg/l | TSS mg/l | $NH_3$-N ORG-N mg/l | TOTAL P ($PO_4$) | (FECAL) (TOTAL) BACT. | GREASE & OIL mg/l | TOXIC METALS ug/l | $BOD_5$ mg/l | STDS. BASE FLOW | |
| CONTROL POINT (headwaters) | | | | | | | | | | | | | | |
| South Platte River at St. Vrain Creek RM 270.0 | 102 | 7.4-8.8 | 78 | 4.2 | 1419 | 110 | 9.0 | 5.1 | 130,000<br>348,000 | | Se 10<br>Zn 400<br>Ag 3<br>Fe 1300 | 14 | | |
| Big Thompson River at S. Platte River RM 260.4 | 11 | 7.2-8.8 | 80 | 2.6 | 2266 | 169 | 7.1 | 4.5 | 330,000<br>700,000 | | Se 20<br>Zn 150<br>Fe 900<br>Mn 250<br>Cu 80<br>Cd 2<br>Hg 1.8 | 88 | | |
| Cache La Poudre | See tributary work sheet. | | | | | | | | | | | | | |
| S. Platte River at Kersey, Colo. RM 246.5 | 208 | 7.3-8.7 | 74 | 4.2 | 1435 | 147 | 3.6 | 7.9 | 5,420,000<br>$16 \times 10^6$ | | Se 12<br>Zn 70<br>Mn 180<br>Fe 900 | 21 | | |
| S. Platte River at Balzac, Colo. RM 174.4 | 24 | 7.3-9.0 | 84 | 4.5 | 1656 | 1180 | 0.9 | 1.9 | 79,000<br>300,000 | | Se 6<br>Zn 220<br>Mn 170<br>Fe 2000 | 10 | | |
| S. Platte River at Julesberg, Colo. RM 87.0 | 34 | 7.5-8.6 | 82 | 4.5 | 1755 | 526 | 0.7 | 5.5 | 300,000<br>3,000,000 | | Hg 0.8<br>Se 11<br>Zn 580<br>Mn 50<br>Fe 1800 | 12 | | |

## TABLE II - AMBIENT WATER QUALITY AT NEAREST DOWNSTREAM MONITORING STATION

SOUTH PLATTE RIVER BASIN

Cache La Poudre River at Greeley Water Supply Diversion to S. Platte River

| WASTEWATER SOURCES AND R.M. | BASIC PARAMETERS - MG/L WHERE APPLICABLE | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FLOW cfs | PH S.U. | TEMP °F | DO mg/l | TDS mg/l | TSS mg/l | $NH_3$-N ORG-N mg/l | TOTAL P ($PO_4$) | (FECAL) (TOTAL) BACT. | GREASE & OIL mg/l | TOXIC METALS mg/l | $BOD_5$ mg/l | STDS. BASE FLOW | |
| CONTROL POINT (headwaters) | | | | | | | | | | | | | | |
| Cache La Poudre River at Ft. Collins RM 249.0 / 54.0 | 6.1 | 7.4-9.5 | 66 | 5.1 | 148 | 11 | 0.21 / - | 0.6 | 172 / 1300 | | | 3.3 | | |
| Cache La Poudre River near Greeley RM 249.0 | 36 | 7.2-9.1 | 76 | 2.8 | 1638 | 50 | 3.3 / - | 6.8 | 490,000 / $>24 \times 10^6$ | | Se 13<br>Zn <20<br>Mn 200<br>Fe 2000 | 135 | | |
| | | | | | | | | | | | | | | |
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TABLE III- INTEGRATED BASIN TACTICAL SOLUTION AND RESOURCE REQUIREMENTS

GENERAL SUMMARY

| SITUATION ANALYSIS | RECOMMENDED ACTIONS BY SUBBASIN & ORGANIZATION RESPONSIBILITY | DATES INITIATION | DATES COMPLETION | PROGRAM ELEMENT | Additional Needed (PROF - MAN - $) FY 73 | FY 7- | |
|---|---|---|---|---|---|---|---|
| During worst conditions Water Quality Standards are violated throughout the Basin for Dissolved Oxygen and fecal coliform parameters. | 0 Influence State to improve WQStds | | | | | | |
| The fundamental causes of these violations are low stream flows due to diversions for agricultural and other uses, inadequate treatment and O&M of municipal wastes, and inadequate treatment of organic wastes from several beet sugar mills owned by Great Western Corp. | .0 Influence State to adopt adequate Permit Program<br>0 Provide training to State personnel<br>0 Provide Monitoring Assistance to State for developing Basin Plan<br>0 Influence State to adopt mandatory operator certification program | | | | | | |
| These major problem areas (except for control of stream flow) have been recognized and an action program is underway - South Platte Basin Accomplishment Plan, January 1972, | 0 Influence and assist State to conduct O&M studies on all WWTP in Basin<br>0 Assist State with operator training program for all WWTP in Basin<br>0 Conduct appropriate stream studies<br>0 Provide Math Model for Basin<br>0 Conduct enforcement conference | | | | | | |
| Basic Short Term Problems Are: | 0 Provide Planning Grants<br>Basin<br>Denver Metro Area - DRCOG<br>Larimer-Weld Reg. Plng Comm | | | | | | |
| 1. Need for protection of High Quality Waters | | | | | | | |
| 2. Regionalization at Littleton-Englewood | 0 Monitor and approve Basin WQM Plan (18CFR601) | | | | | | |
| 3. Denver Metro #1: Need for Expansion, tie-in of sattlelite WWTP. | 0 Conduct PAO program for cleanup actions<br>0 Conduct R&D for<br>Mine Drainage<br>AWT | | | | | | |

TABLE III- INTEGRATED BASIN TACTICAL SOLUTION AND RESOURCE REQUIREMENTS

GENERAL SUMMARY

| SITUATION ANALYSIS | RECOMMENDED ACTIONS BY SUB TASK & ORGANIZATION RESPONSIBILITY | DATES | | PROGRAM ELEMENT | ANNUAL RESOURCE (FY 72 - FY 73 - ) | | |
|---|---|---|---|---|---|---|---|
| | | INITIATION | COMPLETION | | FY 72 | FY 73 | |
| high degree of treatment, possible water exchange with Burlington Ditch Company. | Sludge Disposal<br>No Discharge Alternatives<br>Feedlots | | | | | | |
| 4. Best practicable treatment of Great Western Corp, Sugar Mills | O Insure adequate control at Federal Facilities<br>O Coordinate & Integrate Water Quality control with all environmental factors | | | | | | |
| 5. Adequate O&M at all WWTP | O Provide Construction Grants | | | | | | |
| 6. Adequate disinfection of all coliform wastes | O Process Permits | | | | | | |
| 7. Control of feedlot runoff | O 180 day notices | | | | | | |
| 8. Upgrading of Stream Classifications | O Oil & Hazardous Materials | | | | | | |

TABLE III- INTEGRATED BASIN TACTICAL SOLUTION AND RESOURCE REQUIREMENTS

Headwaters to Bowles Avenue

| SITUATION ANALYSIS | RECOMMENDED ACTIONS BY SUB TASK & ORGANIZATION RESPONSIBILITY | DATES | | PROGRAM PERIOD | MANPOWER RESOURCE REQUIREMENTS (MAN - YEARS) | |
|---|---|---|---|---|---|---|
| | | INITIATION | COMPLETION | | FY 7[illegible] | FY 7[illegible] |
| Present D.O. standard is violated. For proposed reclassification to B3 (Body Contact Recreation) fecal coliform would also be violated.<br><br>Basic need in this reach is to protect the generally high quality waters for recreation purposes at Chatfield Dam and Reservoir (to be in operation during 1975) and for the Littleton Floodplain Park<br><br>Evidence indicates a high nutrient concentration which would cause eutrophication in Chatfield Reservoir. Especially in the Plum Creek arm where 100% of the present organic load is discharged. | 1. Update efforts to obtain schedule for establishing B3 Classification<br><br>2. Investigate nutrient removal needs at all sources in reach; especially Castle Rock & E.I. Du Pont<br><br>3. Investigate literal use of No Discharge Policy for all wastes generated in this reach, i.e., maximum protection of high quality waters | | | | | |

TABLE III- INTEGRATED BASIN TACTICAL SOLUTION AND RESOURCE REQUIREMENTS

Bowles Ave to Exposition (Alameda WQ Station)

| SITUATION ANALYSIS | RECOMMENDED ACTIONS BY SUB TASK & ORGANIZATION RESPONSIBILITY | DATES | | PROGRAM ELEMENT | MANPOWER REQUIRED (PROF - MAN - YRS) | | |
|---|---|---|---|---|---|---|---|
| | | INITIATION | COMPLETION | | FY 73 | FY 74 | FY 75 |
| This reach is classified for cold water fishery. Basic Stds being violated for D.O. and fecal coliform.<br><br>The significant problem areas are:<br>1. Bear Creek<br>Bear Creek in mountain development area of Jefferson County. Pressures of 1976 Winter Olympics and home developers will cause impact on high quality waters. These waters will be impounded behind Mt. Carbon Dam which is scheduled for completion about 1976 . From this Dam upstream nigh degrees of waste control will be required to protect recreation use.<br><br>From Mt. Carbon Dam to confluence with Main stem Bear Creek flood plain is designated as green belt open space and is classified as a warm water fishery. DO and Fecal Coliform Standards are now violated.<br><br>Flow becomes so low as not to support a fishery. Also, stream channelization is taking place and may not be compatible with designated and desired uses. | 1. Develop strategy for Olympics<br><br>2. Prepare position on water quality control in high quality water areas. This is related to reliability of individual treatment systems.<br><br>3. Maintain close review of Mt. Carbon Dam Project through EIS & Water Resource reviews.<br><br>4. Increase DRCOG 3(c) grant to cover mtn areas. | | | | | | |

TABLE III- INTEGRATED BASIN TACTICAL SOLUTION AND RESOURCE REQUIREMENTS

Bowles Ave to Exposition (Alameda WQ Station)

| SITUATION ANALYSIS | RECOMMENDED ACTIONS BY SUB TASK & ORGANIZATION RESPONSIBILITY | DATES | | PROGRAM ELEMENT | MANPOWER REQUIREMENTS (PROF - MAN - YRS) | | |
|---|---|---|---|---|---|---|---|
| | | INITIATION | COMPLETION | | FY 73 | FY 74 | FY |
| Basic needs are for upgrading disinfection at WWTP, Regionalization and/or control of mtn development, future needs for nutrient removal, and control of the flood plain. | | | | | | | |
| 2. Littleton-Englewood | | | | | | | |
| These WWTP's serve high growth area in the Southwest portion of the Denver SMSA, Basic need is for regionalization and improved treatment and O&M. Interim water quality plan designates Englewood as regional site. Probable need for interim measure since Littleton is now overloaded. | 0 Evaluate & Reaffirm Regional Site location<br>0 Determine effluent requirements to maintain cold water fishery | | | | | | |
| 3. Gates Rubber Company | | | | | | | |
| Discharges of Heat, Oil and Grease, and toxics needs high degree of control since discharge is to coldwater fishery. | 0 Investigate no discharge for Gates Rubber Company<br>0 Reevaluate other permits in reach as related to protecting fishery and possible use of no discharge. | | | | | | |

TABLE III- INTEGRATED BASIN TACTICAL SOLUTION AND RESOURCE REQUIREMENTS

Exposition to York

| SITUATION ANALYSIS | RECOMMENDED ACTIONS BY SUB TASK & ORGANIZATION RESPONSIBILITY | DATES INITIATION | DATES COMPLETION | PROGRAM ELEMENT | MANPOWER REQUIREMENTS (PROF - MAN - YR) FY 73 | FY 7- | FY |
|---|---|---|---|---|---|---|---|
| This reach classified as warm water fishery. Standards for DO & fecal coliform is being violated<br>Significant problem areas are: | | | | | | | |
| 1. Cherry Creek<br>Illegal connections to Storm Sewers discharging into Cherry Creek (ie, car washes, etc.)<br>Need for no discharge or AWT of Discharges to Cherry Creek upstream of Cherry Creek Dam. | 0 Develop program to assist City of Denver in Determining and Controlling Sources.<br>0 Determine waste control measures for area upstream from Cherry Creek Dam and impact DRCOG WQM Plan. | | | | | | |
| 2. South Lakewood: reportably poor O&M. Although plant is now being expanded DFI-DC recommends closure and connection to Metro #1. | 0 Investigate in more detail and develop recommendation for DRCOG WQM Plan. | | | | | | |
| 3. Union Pacific and Burlington Railroads: Oil & Grease - BOD - Toxic Materials problem. | 0 Investigate combined pretreatment, no discharge and/or connection to Denver Metro #1. | | | | | | |
| 4. Raw Sewage discharge reported by DFI-DC at Denver Northside WWTP crossover of South Platte at Franklin Street. | 0 Take measures to eliminate discharge through enforcement action & C.G. | | | | | | |
| 5. The Burlington Ditch Company at times, diverts the entire South Platte River upstream from the Denver Metro #1, WWTP discharge. | 0 Investigate in detail effluent requirements under present conditions. | | | | | | |

TABLE XII- INTEGRATED BASIN TACTICAL SOLUTION AND RESOURCE REQUIREMENTS

Exposition to York

| SITUATION ANALYSIS | RECONNAISSANCE AGENCY BY SUB BASIN & ORGANIZATION RESPONSIBILITY | BASIS | | PROGRAM BUDGET | ESTIMATED AMOUNT |
|---|---|---|---|---|---|
| | | QUANTITATIVE | QUALITATIVE | | FISCAL YEAR - MAY - |
| This has two adverse results:<br>1. Stream is dry and does not support desirable life. | O Investigate maintenance of minimum streamflow for fish & aquatic life | | | | |
| 2. The South Platte River as reconstituted is entirely made up of Denver Metro #1 effluent. | O Investigate water exchange between Denver Metro #1 and Burlington Ditch Company | | | | |



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TABLE III- INTEGRATED BASIN TACTICAL SOLUTION AND RESOURCE REQUIREMENTS

York Street to Henderson

| SITUATION ANALYSIS | RECOMMENDED ACTIONS BY SUB TASK & ORGANIZATION RESPONSIBILITY | DATES | | PROGRAM ELEMENT | (FROM - MAY - FY 73 | FY 7- |
|---|---|---|---|---|---|---|
| | | INITIATION | COMPLETION | | | |
| This Reach is classified (C,D]) for Industrial and irrigated agriculture. DO and fecal coliform stds are violated. Fecal Coliform Std in Clear Creek is violated. Significant problem areas are: | 0 Investigate in detail with appropriate State and Federal agencies the upgrading of classification to warm water fishery (High priority because design of Denver Metro. #1 is dependent on this criteria). | | | | | |
| 1. Several priority industrial discharges are congregated in the vicinity of Denver Metro #1 and Sand Creek. | 0 Investigate consolidation of three rendering plant wastes. | | | | | |
| | 0 Investigate consolidation of all industrial waste discharges in area. | | | | | |
| 2. Denver Metro #1 This waste discharge influences the quality of the South Platte River downstream to the confluence of the Cache La Poudre River. Expansion of overloaded plant now in feasibility Study phase. Problem covered in South Platte River Basin Accomplishment Plan January 1972. | 0 Update Jan. 1972 Accomplishment Plan. | | | | | |
| 3. Clear Creek This tributary is a major metropolitan waterway (similar to Bear Creek) which has been identified as prime green belt open space. Two basic needs are improved disinfection at present WWTP facilities and decision for Regionalization of existing | 0 Ensure Golden decision is presented in DRCOG WQM plan as to be amended. | | | | | |
| | 0 Ensure other Regionalization questions are satisfied in DRCOG fully developed WQM plan. | | | | | |
| | 0 Increase DRCOG 3(c) grant to cover mtn areas. | | | | | |

TABLE III- INTEGRATED BASIN TACTICAL SOLUTION AND RESOURCE REQUIREMENTS

York Street to Henderson

| SITUATION ANALYSIS | RECOMMENDED ACTIONS BY SUB TASK & ORGANIZATION RESPONSIBILITY | DATES | | PROGRAM ELEMENT | TECHNICAL RESOURCE (PROF - MAN - |
|---|---|---|---|---|---|
| | | INITIATION | COMPLETION | | FY 73 FY 74 FY |
| facilities with Denver Metro #1.<br><br>In broader context there is need for land use plan for the floodplain. This area will be focal point for recreation and the need is for adequate stream flow (which doesn't exist) and related water quality. Water quality problems relate to Water Rights, Mine drainage, Sand and Gravel operations, and Garbage dumps located beside the creek.<br><br>One complex decision is whether Golden should tie into Metro #1 or discharge to Clear Creek in order to maintain a minimum streamflow. | | | | | |

TABLE III- INTEGRATED BASIN TACTICAL SOLUTION AND RESOURCE REQUIREMENTS

Henderson to Colorado - Nebraska State Line

| SITUATION ANALYSIS | RECOMMENDED ACTIONS BY SID TASK & ORGANIZATION RESPONSIBILITY | DATES INITIATION | DATES COMPLETION | PROGRAM ELEMENT | ADDITIONAL RESOURCES (FROM - MAN - $) FY 73 | FY 7- |
|---|---|---|---|---|---|---|
| This Reach is classified (C,D1) for industrial and irrigated agriculture. DO and fecal coliform stds are violated on main stem and tributaries thereto.<br><br>Major waste discharge problems include residual influence of Denver Metro #1, Beet Sugar Mills, Feedlot Runoff, meat packing, and diffuse source runoff. Major feedlots upstream from Kersey. | 0 Investigate in detail with appropriate State and Federal agencies the upgrading of classification to warm water fishery. (High priority because design of Denver Metro #1 is dependent on this criteria). | | | | | |
| 1. Tributaries<br>A. Coal Creek, Boulder Creek, & Little Thompson River. Small WWTD need improved O&M and Disinfection. Best Practicable Treatment for industries. | 0 Investigate need for in-depth stream surveys to document cleanup actions. | | | | | |
| B. Big Thompson River<br>1. Need correction of Total Suspended Solids from Flatiron Sand & Gravel and Flatiron Paving Company. | | | | | | |
| 2. BPT for Great Western Sugar (Loveland) | | | | | | |
| 3. Need Regionalization of Federal Facilities and Town of Estes | 0 Require regionalization plan<br>0 Possible need for lake and stream quality survey | | | | | |

TABLE III- INTEGRATED BASIN TACTICAL SOLUTION AND RESOURCE REQUIREMENTS

Henderson to Colorado - Nebraska State Line

| SITUATION ANALYSIS | RECOMMENDED ACTIONS BY STEP TASK & ORGANIZATION RESPONSIBILITY | DATES INITIATION | DATES COMPLETION | PROGRAM ELEMENT | MANPOWER REQUIREMENTS (PROF - MAN - ) FY 73 74 75 |
|---|---|---|---|---|---|
| Park at Rocky Mtn N.P. Problem involves local jurisdictional overlap and protection of Lake Estes. | | | | | |
| C. St. Vrain Creek<br>1. Ft. St. Vrain-Nuclear Generating Station is future major facility. | 0 Continue EIS Strategy | | | | |
| 2. BPT for Great Western (Longmont) | | | | | |
| 3. BPT for Allied Chemical | 0 Investigate no discharge | | | | |
| D. Big Dry Creek requires improved disinfection at Broomfield WWTP | | | | | |
| E. Crow Creek<br>1. BPT should solve existing industrial problems. | 0 Investigate high temp discharge and control through Permit for Cheyenne Light and Fuel. | | | | |
| 2. Cheyenne WWTP effluent is 80mg/l BOD | 0 Improve design, O&M. | | | | |
| II. Main Stem | | | | | |
| All eight Municipal WWTP are discharging high concentrations of coliform. Degree of disinfection depends on results of any use classification change. | 0 Develop program for improved O&M emphasizing increased disinfection. | | | | |

TABLE III- INTEGRATED BASIN TACTICAL SOLUTION AND RESOURCE REQUIREMENTS

Cache La Poudre

| SITUATION ANALYSIS | RECOMMENDED ACTIONS BY SUB TASK & ORGANIZATION RESPONSIBILITY | DATES INITIATION | DATES COMPLETION | PROGRAM ELEMENT | MANPOWER REQUIREMENTS (PROF - MAN - Y) FY 73 | FY 7- | |
|---|---|---|---|---|---|---|---|
| This river is classified as a cold water fishery to Ted's Place (Greeley Water Supply Diversion) and then warm water fishery from Ft. Collins to Greeley and then Industrial Irrigated Agriculture to confluence with South Platte River. DO std is violated at confluence with South Platte River. | | | | | | | |
| Review of limited data indicates possibility of reclassification of river to cold water fishery downstream at least to Greeley. | O Investigate with appropriate State & Local agencies the upgrading of Classification to Cold Water Fishery down to Greeley. | | | | | | |
| | O Possible need for intensive stream survey. | | | | | | |
| Significant problems include: | | | | | | | |
| 1. Ft. Collins Light & Power discharges 150°F Max. | O Investigate permit condition. | | | | | | |
| 2. Regionalization required between Fort Collins #1, Fort Collins #2, and Boxelder, WWTP and definition of effluent requirements. | O Require regionalization analysis prior to award of C.G. for Boxelder. | | | | | | |

TABLE III- INTEGRATED BASIN TACTICAL SOLUTION AND RESOURCE REQUIREMENTS

Cache La Poudre

| SITUATION ANALYSIS | RECOMMENDED ACTIONS BY SUB TASK & ORGANIZATION RESPONSIBILITY | DATES | | PROGRAM ELEMENT | MANPOWER REQUIREMENTS (PROF - MAN - YRS) FY 73 | FY 7- | |
|---|---|---|---|---|---|---|---|
| | | INITIATION | COMPLETION | | | | |
| 3. Gravel & Paving Companies indicate high Suspended Solids discharge which could effect establishment of cold water fishery. | 0 Investigate permit conditions and control achieved | | | | | | |
| 4. Discharges in and around Greeley have in most part been investigated in appropriate detail through Construction Grant, EIS, and Enforcement actions. | 0 Follow through on Construction Grant<br>0 Follow through on 180 day notice. | | | | | | |

# APPENDIX J

## TABLE IV - WATER QUALITY IMPROVEMENT THROUGH COMPLETION OF ACTION ITEMS

INDIVIDUAL SOURCE OR CLUSTER OF SOURCES: Bowles - Exposition (Littleton - Englewood)

| WATER QUALITY PARAMETERS | AGGREGATED ACTION ITEMS REQUIRED FOR REDUCTION | PRESENT WASTE LOADS (24 hr - ave) | WASTE LOADS REDUCTION (SEE TABLE III) | | | | | PRESENT WATER QUALITY | ANTICIPATED WATER ... (7-day - 10 year flo... (SEE WQS & TABLE III) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (From TABLE III) | (See TABLE I) | FY 72 | FY 73 | FY 74 | FY 75 | FY 76 | (See TABLE II) | FY 72 | FY 73 | FY 74 | FY 75 | FY 76 |
| Dissolved oxygen | (1) Evaluate & reaffirm regional site location. | 8100 lbs. BOD 5 | 0 | 5000 | 0 | 0 | 0 | D.O. 2.4 mg/l | | 3.0 | 6.0 | 6.0 | 6.0 |
| | (2) Get Littleton to send overflow to Englewood WWTP. | | | | | | | | | | | | |
| | (3) Regional plant to be constructed. | | | | | | | | | | | | |
| Fecal Coliform | (1) Investigate sources of fecal pollution other than Littleton and Englewood WWTP that are discharging fecal coliform. | | | | | | | 17,000/100 ml | | | | | |

TABLE IV - WATER QUALITY IMPROVEMENT THROUGH COMPLETION OF ACTION ITEMS

INDIVIDUAL SOURCE OR CLUSTER OF SOURCES: Yorke - Henderson (Denver Metro)

| WATER QUALITY PARAMETERS | AGGREGATED ACTION ITEMS REQUIRED FOR REDUCTION (From TABLE III) | PRESENT WASTE LOADS (24 hr - ave) (See TABLE I) | WASTE LOADS REDUCTION (SEE TABLE III) FY 72 | FY 73 | FY 74 | FY 75 | FY 76 | PRESENT WATER QUALITY (See TABLE II) | ANTICIPATED WATER QUALITY (7-day - 10 year flow) (SEE LOADS & TABLE III) FY 72 | FY 73 | FY 74 | FY 75 | FY 76 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dissolved Oxygen | (1) Overloaded Denver Metro WWTP needs to be expanded to treat increasing wastewater flows. | 43,800 | - | [illegible] | [illegible] | [illegible] | [illegible] | 2.8 mg/l | 2.8 | <2.8 | 2.8 | 2.8 | 3.0 |
| Fecal Coliform | (1) Upgrade Chlorination capacity of all WWTP in Clear Creek and on South Platte River including Denver Metro. | | 0 | 0 | 0 | 0 | [illegible] | 109,000/100 ml | $1.1X10^5$ | [illegible] | [illegible] | [illegible] | [illegible] |

TABLE IV - WATER QUALITY IMPROVEMENT THROUGH COMPLETION OF ACTION ITEMS

INDIVIDUAL SOURCE OR CLUSTER OF SOURCES: Cache La Poudre
Greeley Area

| WATER QUALITY PARAMETERS | AGGREGATED ACTION ITEMS REQUIRED FOR REDUCTION | PRESENT WASTE LOADS (24 hr - ave) | WASTE LOADS REDUCTION (SEE TABLE III) | | | | | PRESENT WATER QUALITY | ANTICIPATED WATER QUALITY (7-day - 10 year flow) (SEE WQS & TABLE III) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (From TABLE III) | (See TABLE I) | FY 72 | FY 73 | FY 74 | FY 75 | FY 76 | (See TABLE II) | FY 72 | FY 73 | FY 74 | FY 75 | FY 76 |
| Dissolved Oxygen | (1) Great Western Sugar to upgrade WWTP by 9/72. (2) City of Greeley to have new WWTP on line by 6/73 and reduce effluent $BOD_5$. | 37,500 | - | [illegible] | [illegible] | [illegible] | [illegible] | 2.8 mg/l | - | 4.0 | 5.0 | 6.1 | 6.1 |
| Fecal Coliform | (1) Upgrade existing disinfection at municipal and industrial wastewater T.P. | | | | | | | 490,000 mg/l | | [illegible] | [illegible] | [illegible] | [illegible] |

## TABLE IV - WATER QUALITY IMPROVEMENT THROUGH COMPLETION OF ACTION ITEMS

INDIVIDUAL SOURCE OR CLUSTER OF SOURCES: Cache La Poudre
Fort Collins Area

| WATER QUALITY PARAMETERS | AGGREGATED ACTION ITEMS REQUIRED FOR REDUCTION | PRESENT WASTE LOADS (24 hr - ave) | WASTE LOADS REDUCTION (SEE TABLE III) | | | | | PRESENT WATER QUALITY | ANTICIPATED WATER QUALITY (7-day - 10 year flow) (SEE REQS & TABLE III) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (From TABLE III) | (See TABLE I) | FY 72 | FY 73 | FY 74 | FY 75 | FY 76 | (See TABLE II) | FY 72 | FY 73 | FY 74 | FY 75 | FY 76 |
| Dissolved Oxygen | (1) Upgrade existing Fort Collins #1 WWTP to get 85% $BOD_5$ removal. (2) Get Boxelder S.D. and Fort Collins #2 WWTP studied for possible regionalization. (3) Get Fort Collins #2 and Boxelder up to 85% $BOD_5$ Removal. | 3400 lb $BOD_5$ | — | — | 3,000 | 4,000 | 4,000 | 7.4 mg/l | - | 5.0 | 6.5 | 6.5 | 6.5 |
| Fecal Coliform | (1) Upgrade existing WWTP disinfection capacity. | | | | | | | 7 | — | — | | | |